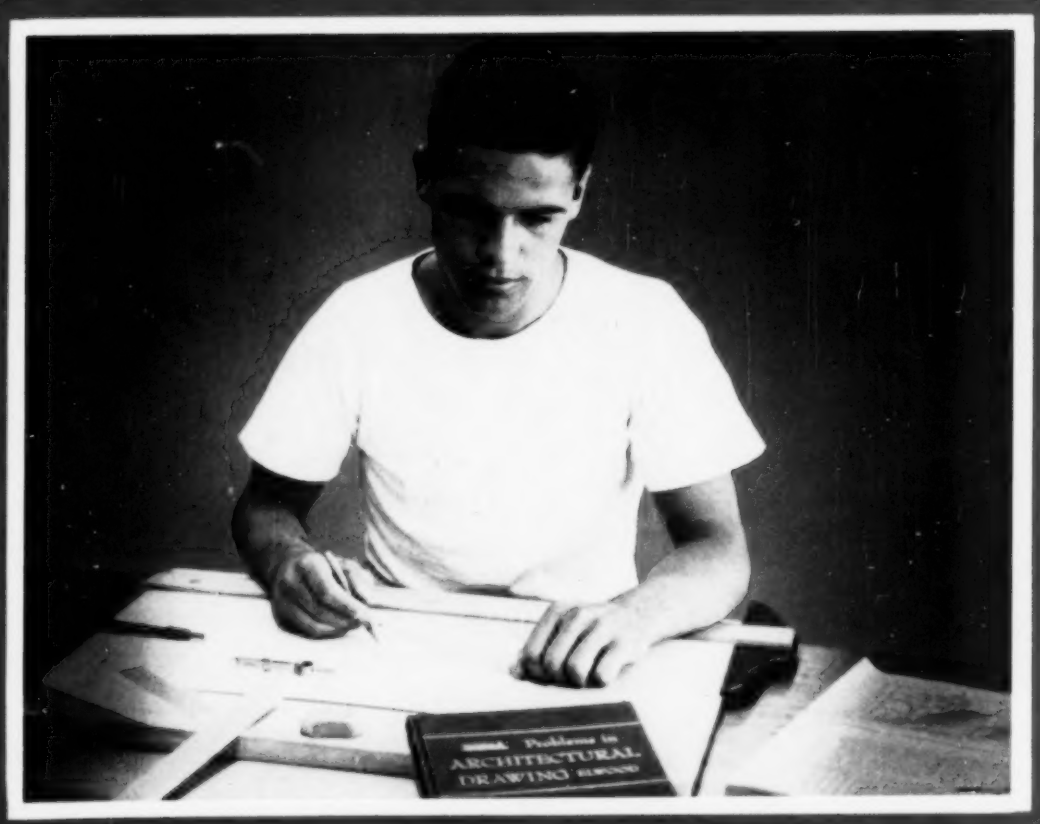
JANUARY, 1954 Vol. 43, No. 1

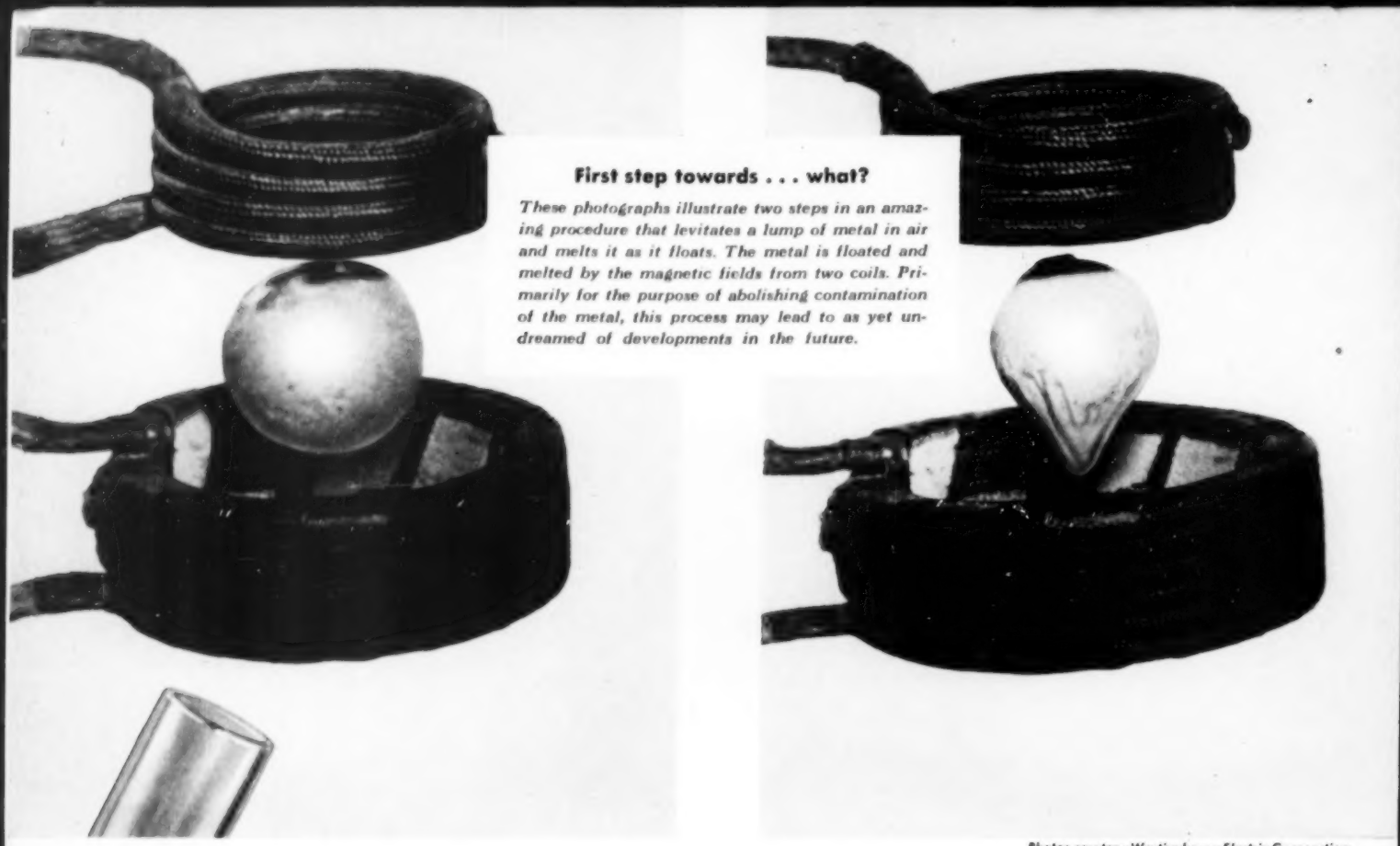
Industrial Arts and Vocational Education

1914 40th Anniversary Issue 1954

THE SHOP TEACHERS' PROFESSIONAL MAGAZINE



40th ANNIVERSARY NUMBER



First step towards . . . what?

These photographs illustrate two steps in an amazing procedure that levitates a lump of metal in air and melts it as it floats. The metal is floated and melted by the magnetic fields from two coils. Primarily for the purpose of abolishing contamination of the metal, this process may lead to as yet undreamed of developments in the future.

Photos courtesy Westinghouse Electric Corporation

The thrust . . . and the awareness

What the aftermath of an amazing development such as that shown above may be no man can tell. For man's mind works by a process of thrust . . . and awareness. Almost naked will probes the darkness of the unknown like a sword and then man becomes aware of what has been brought to light. This is as true of the penetrating perceptions of ancient Greek philosophy as it is of the achievements of an Einstein, of the great thrusts of science and engineering today.

Since this process is so productive . . . *and only it can be productive* . . . surely more men must be brought to awareness of its very existence. That is the first step past mere egotism and self-absorption into the realm where men see, create and *give*, where may be found the enlightenment which alone can bring peace and amity to the world.

Is this too much to propose to educators as substance for their students? Not at all. It is just a question of in which direction native energy, native ambition, native thought, native action will go. Mechanical drafting teaching for example can be completely "mechanical" or it can be shown for what it is . . . first step in creativeness . . . initial move toward giant career . . . first step linking hand and brain . . . a demonstration to the student that *all* originates from within.

At such a point, whether a student shall economize on the purchase of the tools of this discipline becomes an impertinent question. Shall the minor saving so gained in the purchase of the cheap and shoddy be permitted to vitiate perhaps all the educator is trying to do? We think not.

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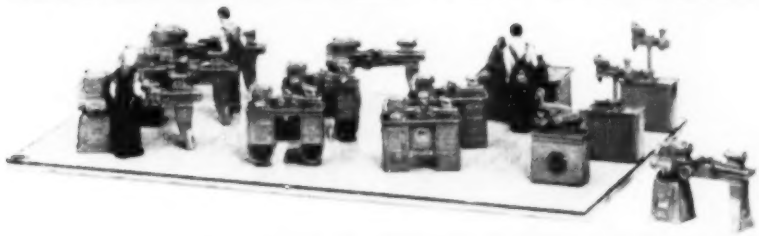

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Please ship your Shop Model Kit to address below, express collect. I wish to borrow the kit for approximately_____days, and agree to return it to you, express prepaid, at the end of that time. Shop being planned is to be located at_____ _____. I understand there is to be no charge for the loan of this kit, other than the transportation costs which I am to pay.

SCHOOL_____

STREET ADDRESS_____

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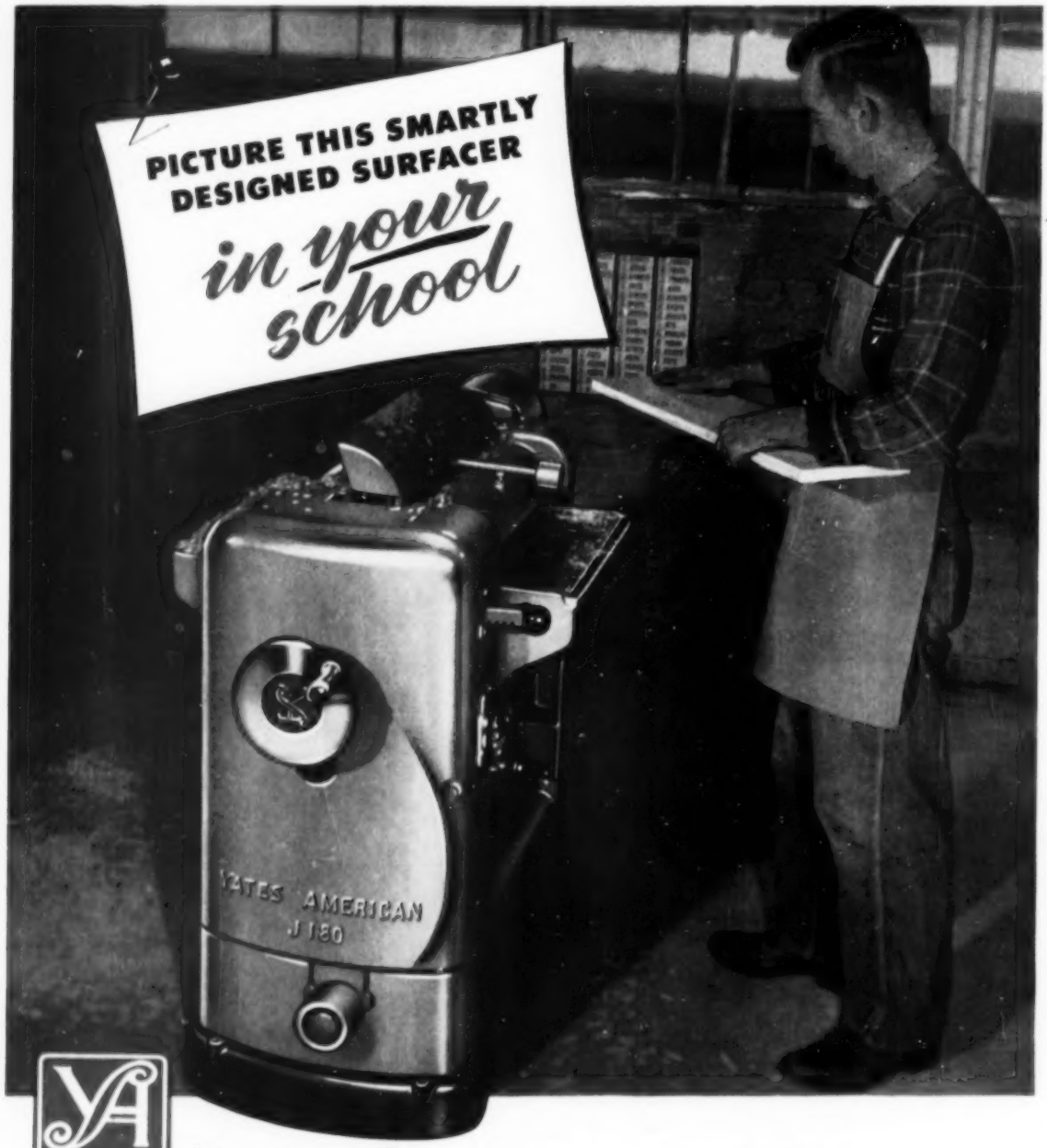

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JANUARY
1954

VOL. 43 NO. 1

INDUSTRIAL ARTS and VOCATIONAL EDUCATION

The Shop Teachers' Professional Magazine

Published on the 15th of the month preceding the date of issue by **THE BRUCE PUBLISHING COMPANY**, 400 North Broadway, Milwaukee 1, Wisconsin • **CENTRAL OFFICE:** 20 North Wacker Drive, Chicago 6, Illinois • **EASTERN OFFICE:** 225 Broadway, New York 7, New York.

This Month's Cover

The picture used on the January, 1954, cover of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION shows Lee Myers, advanced drafting student at the Tucson, Ariz., Senior High School. He was photographed by Jim McCord, advanced photography student, and the photograph was submitted by Harry A. Goldstein, instructor of photography.

* * * * *

Join the March of Dimes
January 2 - 31
It will take more in '54.

* * * * *

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ASSOCIATION NEWS

WISCONSIN INDUSTRIAL ARTS ASSOCIATION

The Wisconsin Industrial Arts Association held its annual meeting in the Public Museum Lecture Hall in Milwaukee, Wis., at 2:00 p.m., on Thursday, November 5, 1953.

R. A. Wigen of the Stout Institute, Menomonie, Wis., acted as chairman.

The main speaker at this meeting was Dr. William J. Micheels, professor of industrial education, University of Minnesota, and his subject was "Creativity and the Industrial Arts Teacher."

Roy A. Radtke, director of industrial arts for the Milwaukee School System, gave a brief report on "Shop Liability." He also called attention to the most excellent exhibit of Milwaukee teachers' projects, and the Wisconsin Ford Industrial Arts Awards projects displayed in Mechanics Hall at the Milwaukee Auditorium.

The Epsilon Pi Tau breakfast arranged by Harold A. Schulz at the Wisconsin Hotel, Milwaukee, Wis., was held at 7:00 a.m., on Friday, November 6.

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It's not just chance that Millers Falls bit braces rank as the world's largest-selling quality line.

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No. 772
Preferred by expert craftsmen everywhere. A beautifully finished tool with full ball bearing construction, Lion universal type chuck, head and handle of fine grained tropical hardwood. All exposed metal parts heavily plated and highly buffed.

Officers for the coming year are: president, Leo E. Jenkins, La Crosse, Wis.; vice-president, Fred S. Darling, Beloit; secretary-treasurer, Leo R. Ebben; member, committee at large, Wilbert Bohnsack, Milwaukee.

WISCONSIN VOCATIONAL AND ADULT EDUCATION ASSOCIATION

The annual luncheon meeting of the WVAE Association was held in the Empire Room of the Schroeder Hotel at 12:30 p.m., on Thursday, November 5, 1953.

The chairman on this occasion was C. D. Rejahl, Madison, Wis., and the speaker of the day was C. L. Greiber, director, State Board of Vocational and Adult Education, Madison, Wis. As his subject the speaker chose "Vocational Education as I Found It in Germany."

INSTITUTE FOR GENERAL SHOP TEACHERS

Nearly 200 industrial-arts teachers, supervisors, teacher trainers, and administrators from Michigan and Ohio attended an institute for general shop teachers in Ann Arbor on Friday and Saturday, November 6 and 7. The conference was sponsored by the department of vocational education and practical arts of the University of Michigan and was under the leadership of Howard H. Gerrish, head of industrial arts, University High School, and Ralph C. Wenrich, chairman of the department. The institute theme was "New Ideas and Activities for Your General Shop."

On Friday evening following the dinner, J. A. Fuzak, Michigan State College; John L. Feirer, Western Michigan College of Education; George F. DePuy, Central Michigan College of Education; and G. Harold Silvius, Wayne University, participated in a symposium on a number of current concepts regarding industrial arts.

On Saturday morning and afternoon there was held a series of demonstrations on ceramics, boat-building, jewelry making and enameling, and plastics in relation to the general shop, and arts and crafts in relation to the elementary grades. At the Saturday luncheon Professor Stanley E. Dimond of the University School of Education spoke on the subject, "Industrial Arts in 1975."

The institute was an outgrowth of a recommendation of the University Advisory Committee on industrial-arts teacher education, which group also served as the planning committee for the conference.

VOCATIONAL TEACHERS RECEIVE HONORS AWARD

Eleven faculty and staff members who have served the Milwaukee Vocational and Adult Schools for 25 and 35 years were awarded pins by the Milwaukee Government Service League. Recognition was made at the annual "awards night" held at the Elks Club, November 13.

Honored for her 35 years of service to the school was Miss Dorothy Patten. Those who received 25-year pins were: Misses Berenice Boland, Margaret Breen, Edith Brown, Maurine Miller, Helen Tyler, Mrs. Esther Boisclair, Messrs. Hiram E. Barg, Peter J. Koppenaal, Herbert G. Krueger, and John Spott.

PENNSYLVANIA INDUSTRIAL ARTS TEACHERS MEET

On Wednesday, November 18, 1953, the Pennsylvania Industrial-Arts Teachers Professional Association visited the Union Spring and Manufacturing Company at the New Kensington Bridge, in New Kensington, Pa.

This company makes all kinds of springs from the heaviest for army armament to small types.

The Allegheny County Industrial Arts men saw paint in the making during their last meeting at the Pittsburgh Plate Glass Company's Paint Division. Of special interest were the mills for

(Continued on page 6A)

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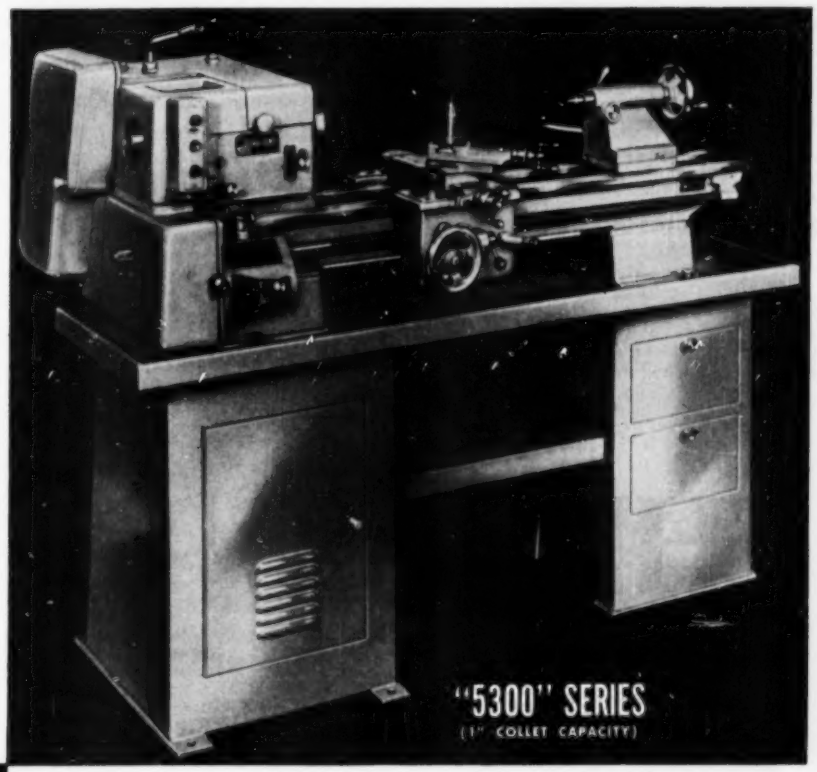

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CLUTCH AND BRAKE EQUIPPED COUNTERSHAFT
Friction clutch-brake permits instant starts and stops of spindle without stopping motor. Belts are fully guarded.

LARGE TAILSTOCK
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The new CLAUSING "5300" is the most practical 1" collet capacity lathe for vocational training . . . at or near its price. It has *Safety Plus!* Belts, pulleys, shafts and gears are fully guarded . . . headstock hood will not open unless clutch is disengaged, and clutch will not engage unless the hood is closed . . . and conveniently located controls. *It has Efficiency Plus!* It's a husky lathe, ruggedly built to handle every job faster, more accurately . . . has bigger spindle and tailstock ram for wider work range . . . big graduated dials and big controls for faster setups. And it has *Economy Plus!* It's low in cost, both initial and operating . . . and it's low in maintenance cost . . . a heavy-duty precision lathe built to withstand years of round-the-clock production use. Its simplicity of operation saves time for teachers and students alike. The new CLAUSING "5300" is by far —

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ASSOCIATION NEWS

(Continued from page 4A)

grinding the pigment. This plant is one of the most modern in the world.

For the meeting in spring, a visit to the Rockwell Manufacturing Company has been planned. This company will furnish the group a 10-in. band saw as a door prize.— *Ralph V. Steeb.*

INDUSTRIAL ARTS CONFERENCE MEETS

The 40th meeting of the Industrial Arts Conference was held at Hotel LaSalle, Chicago, Ill., November 12, 13, and 14, 1953.

As usual, a majority of the members were in attendance at each of the five sessions.

Promptly at 9:30 a.m., on Thursday, the first meeting was opened by Verne C. Fryklund, general chairman of the organization. The topic of discussion for this session was: "To What Extent Are Industrial Arts or Industrial Education Departments Offering Degrees and Courses That Do Not Qualify Graduates to Teach, but Prepare Them for Industry?"

The committee that had been appointed to present the subject, consisted of: N. A. Hauer, Louisiana State University, Baton Rouge, La., *chairman;* E. W. Tischendorf, Kent State University, Kent, Ohio; O. A. Hankammer, State Teachers College, Pittsburg, Kans.

As is customary, the three members of the committee were allowed 45 minutes to present the subject; the remainder of the time is reserved for general discussion.

Each of these men must also formulate from three to five theses, conclusions, statements, or recommendations, which he proposes to present and discuss, and he must furthermore furnish 100 mimeographed copies of this material for distribution to the membership.

The papers as well as the discussion showed quite some prevalence of the practice of offering opportunities and courses to students who are not intending to teach industrial arts.

At the second session on Thursday afternoon, Arthur B. Mays acted as general chairman.

The question discussed was: "How Are We Meeting the General Education Objectives in Industrial Arts?"

The committee that presented the topic consisted of: W. D. Stoner, Miami University, Oxford, Ohio, *chairman;* F. J. Schmidt, Jr., State Teachers College, Muncie, Ind.; and M. E. Franklin, Northeastern State College, Tahlequah, Okla.

The committee spent some time in presenting definitions of terms, a study of objectives, and what industrial arts should contribute to give the student the proper attitudes, skills, knowledge, and appreciation.

At the third session a question was discussed which has produced many heated debates. Stated in plain English it is:

"We have in the field of industrial arts two divergent schools of thought: (1) those who believe that the content for industrial arts should be derived from an analysis of industrial practices and, (2) those who believe that the content should be based on the problems, needs, and interests of the learner. The first group puts considerably more emphasis on the development of skill in the manipulative processes, while the second group puts the emphasis on the development of the individual and the manipulative processes are primarily a means rather than an end. The reason for the differences between these two groups is primarily one of a lack of understanding and agreement regarding basic psychological and sociological concepts."

The general chairman at the third session was Verne C. Fryklund, and the committee consisted of: Homer J. Smith, University of Minnesota, Minneapolis, Minn., *chairman;* Ralph Wenrich, University of Michigan, Ann Arbor, Mich.; and H. H. London, University of Missouri, Columbia, Mo.

The three experienced men who had been appointed to present the problem were equal to the occasion and met most of the objections raised.

At the fourth session DeWitt Hunt served as general chairman. The question to be discussed was: "How Should We Determine Content (Instructional Units) for Industrial Arts Courses?"

The committee to submit this problem to the members was comprised of the following: A. G. Williams, Southeast Missouri State College, Cape Girardeau, Mo., *chairman;* S. M. Dell, McPherson College, McPherson, Kans.; and W. A. Klehm, Eastern Illinois State College, Charleston, Ill.

Several of the speakers suggested that the program of the school must be planned to meet the varied needs of its students, which is also recommended by the AVA bulletin recently issued.

At the Saturday morning conference, Verne C. Fryklund acted as general chairman.

The question to be considered was: "A Further Consideration of Shopwork for Graduate Credit. How May It Be Dignified and Raised to Unquestionable Graduate Caliber?"

The members of the committee were: DeWitt T. Hunt, Oklahoma A. & M. College, Stillwater, Okla., *chairman;* C. R. Kinison, Ohio University, Athens, Ohio; and G. H. Silvius, Wayne University, Detroit, Mich.

It was suggested, both by committee members, as well as by members from the floor that graduate students lacking certain shopwork experiences, be assisted to analyze his previous training and experiences, so that his course can be made as practical as possible in satisfying

(Continued on page 16A)

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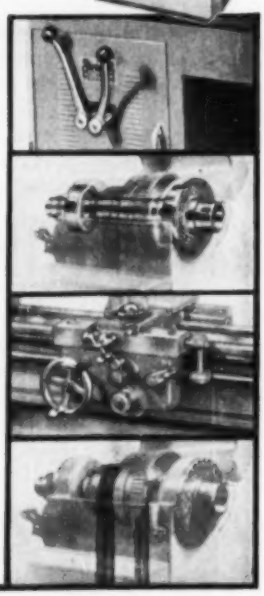

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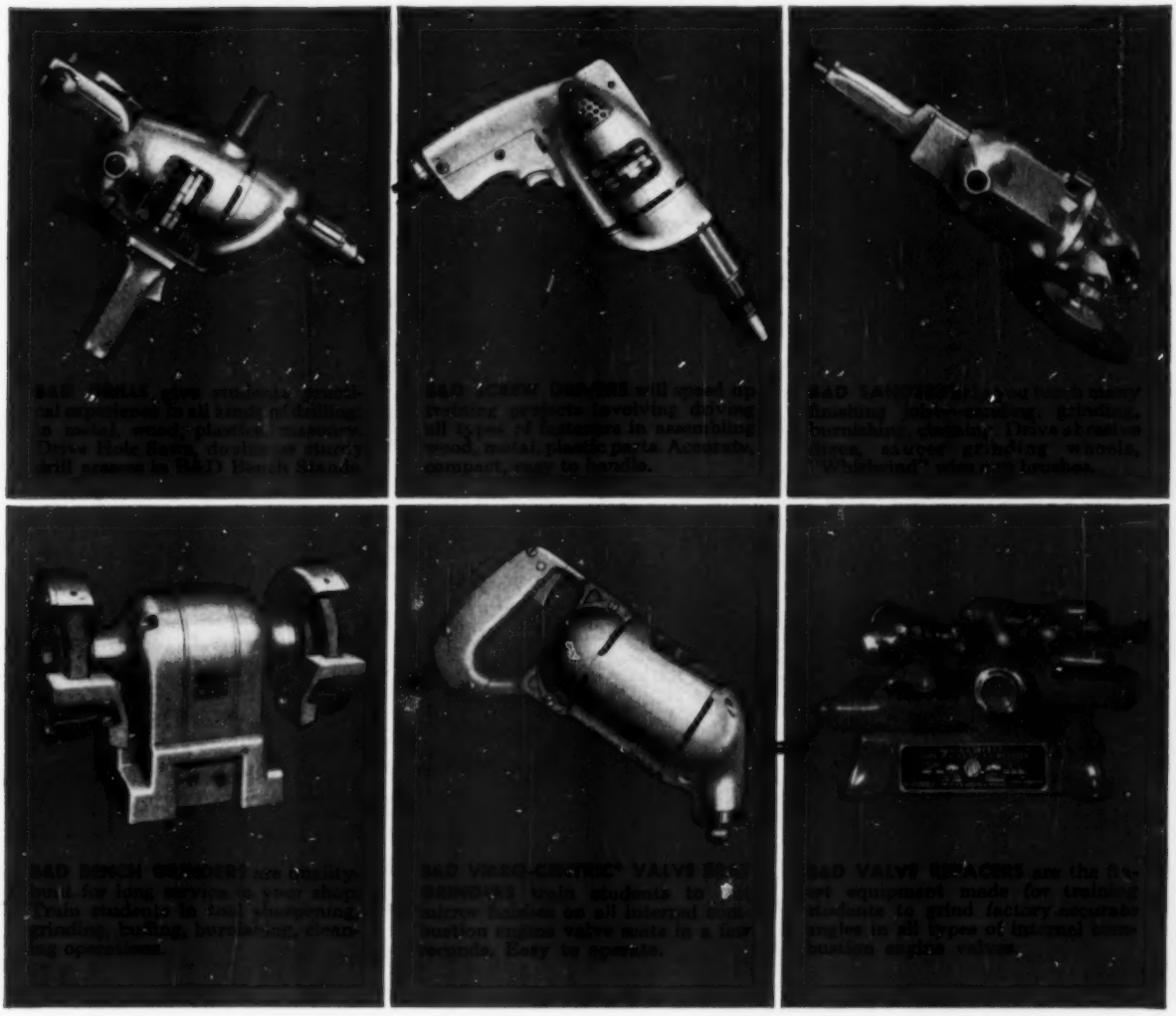

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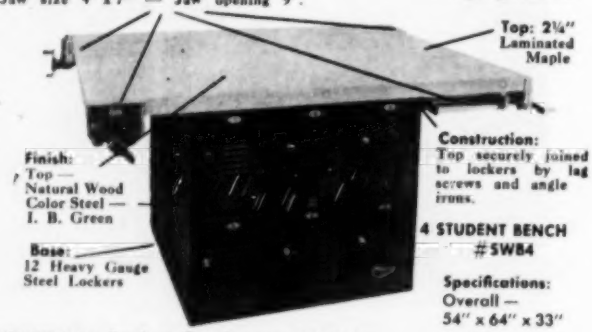
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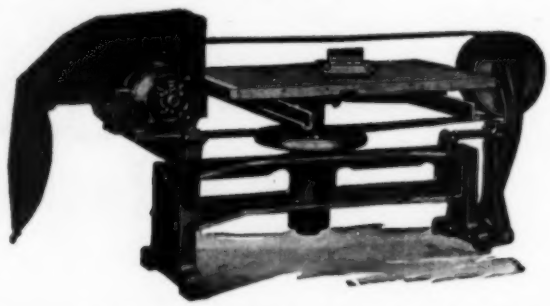

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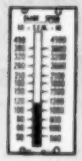

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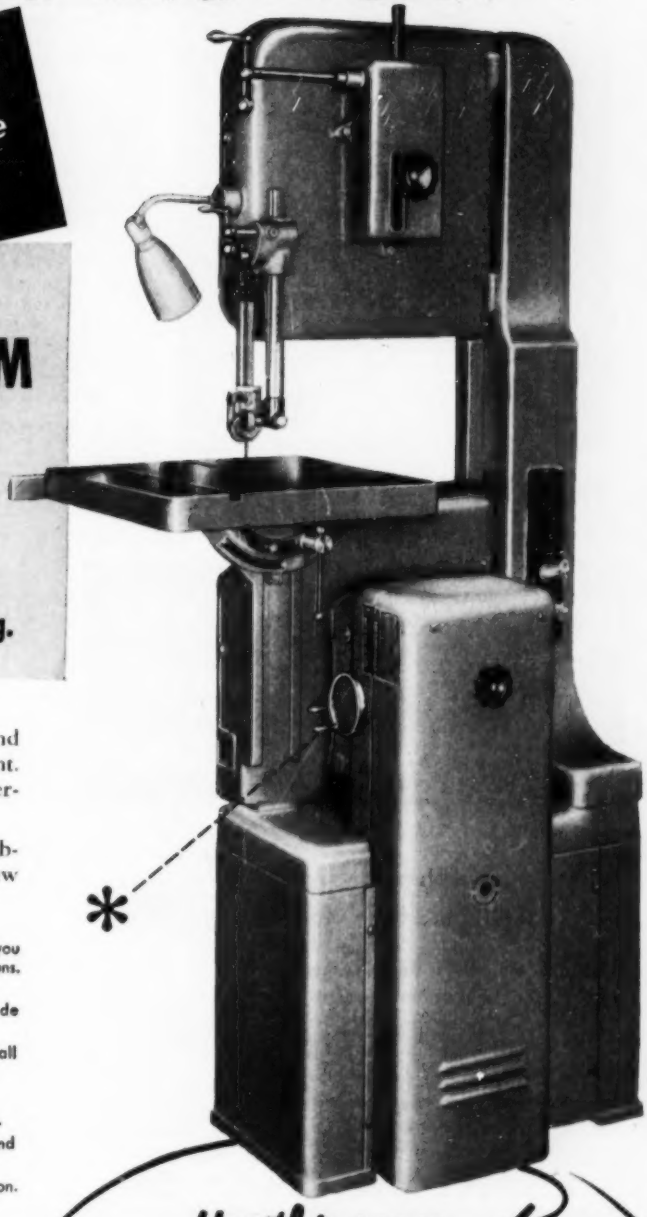

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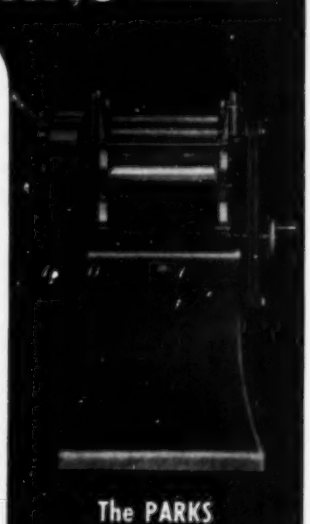

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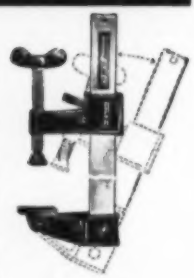

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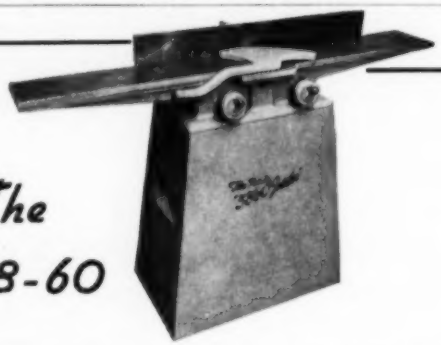

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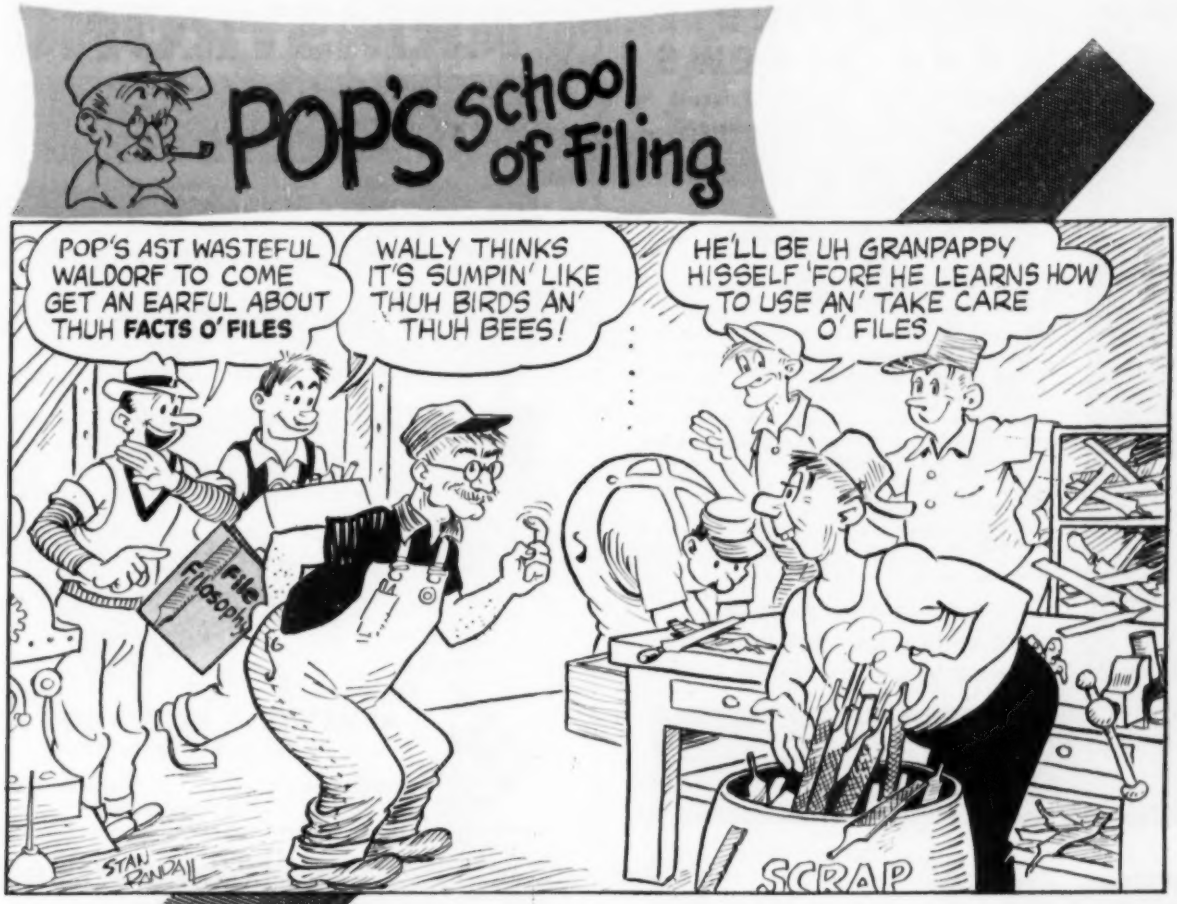
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POP'S AST WASTEFUL WALDORF TO COME GET AN EARFUL ABOUT THUH FACTS O' FILES
WALLY THINKS IT'S SUMPIN' LIKE THUH BIRDS AN' THUH BEES!
HE'LL BE UH GRANPAPPY HISSELF 'FORE HE LEARNS HOW TO USE AN' TAKE CARE O' FILES
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SCRAP
STAN RANDALL

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DON'T let files become clogged with dirt or filings.

DO "tap" file frequently (on wood) to loosen chips; also clean with file brush or "card."

DON'T throw files on top of one another. (Scuffs, blunts and chips teeth.)

DO keep files separated (in racks).

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Nicholson's "File Filosophy" is an excellent and widely used 48-page illustrated "textbook" that will help any instructor. *It will be sent without charge to school management and faculty members on individual requests.* To put its information into practice, your school shop should be equipped with at least the key types of Nicholson or Black Diamond Regular and Special Purpose Files, described in the book. Full complements are most sure to be obtainable from industrial supply houses.

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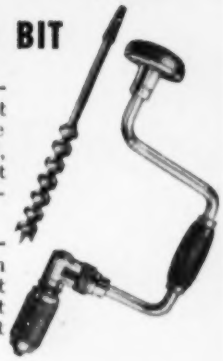
NEW BIT GAUGE

The Stanley #47 — A fully adjustable bit gauge that will not mar any surface. When the hole is bored to the depth wanted the gauge end touches the work. If boring continues this flexible spring bends — but it won't mar the surface.

BIT BRACE & AUGER BIT



The Stanley "100 PLUS" #100 — The Russell Jennings auger bit shown here is ideal for use with the 923 Brace. Shop-tested and proved, this double threaded screw point bit bores easily and cuts a smooth, accurate hole.

The Stanley "100 PLUS" #923 — This brace features the new, built-in Self-Centering Chuck that makes bit centering automatic and positive. It holds any size auger bit and straight shank drills from ¼" to ½".

HAND DRILL

The Stanley "100 PLUS" #610 — A compact drill for wood and metal. It has enclosed gears so there's no place to catch hands and clothing and the chuck is locked to the spindle by a snap ring which prevents threading off. Here's a *really* boy-proof drill.

"YANKEE" PUSH DRILL

The Yankee "100 PLUS" #41. The mechanic's friend, this sturdy all metal tool is ideal for shop use. Bores smoothly with a one-hand drilling action. The drill point in use is locked in. Drills from 1/16" to 11/64" (by 64ths) are stored in the magazine handle.

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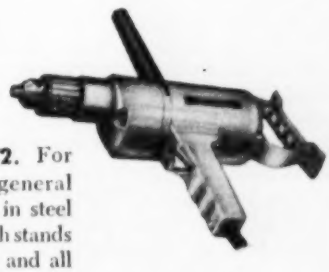
The Stanley #235. A fistful of power, the "Mighty Midget" is light enough for the smallest boy in the class — 8¾" long and only 3¼ lbs. This is the most powerful drill of its size . . . drills ¼" in steel and ½" in hard wood. Full ball-bearing. Available in six different speeds.

ELECTRIC DRILL



The Stanley #112. For heavier work; this general purpose drill cuts ¼" in steel and 1¾" in wood. Bench stands are available for this, and all Stanley Electric Drills.

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DELTA The "Natural Choice" at new East Lake Junior High School

"With their ease of operation and built-in safety features, DELTA power tools just seem to be made for school shops," says Mr. Henry Roy, shop instructor, commenting on the purchase of Rockwell-built DELTA Tools for East Lake Junior High School, Massepequa Park, N.Y. Ultra-modern East Lake has one of the most complete power-tool equipped shops in the nation. "DELTA was the natural choice," says Mr. Roy.

Heavy schedules, both day-time and evening, demand durable equipment, and, according to Mr. Roy, "DELTA tools require only a bare minimum of maintenance, permitting us to keep them running constantly."

"Students too, are enthusiastic about DELTA tools," reports Mr. Roy. "They appreciate DELTA'S clean, accurate cuts on wood, plastics and other materials."

You'll find DELTA a wise investment for your school, too. The inherent safety, simplicity, and extremely low operating cost that make DELTA Power Tools the leader in industrial and home workshop use, also make them the "natural choice" for industrial arts instruction.

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DELTA Power Tools were the "natural choice" for students at new East Lake Junior High School, Massepequa Park, New York. Included are: a 14" and a 17" Drill Press; a 14" and a 20" Band Saw; a 24" Scroll Saw; a 10" Tilting Arbor Unisaw; an 8" Jointer; two Tool Grinders; a 12" Lathe; and a 6" Belt Sanding Machine.

DELTA QUALITY MAKES THE DIFFERENCE

INDUSTRIAL ARTS and VOCATIONAL EDUCATION
The Shop Teachers' Professional Magazine

JANUARY 1954

Four Decades of Sound Educational Journalism

TOM HIPPAKA
Professor of Industrial Education
Iowa State College
Ames, Iowa

For forty years *Industrial Arts and Vocational Education* has chronicled the past, present, and at times even the future of industrial-arts education, as well as vocational industrial education. This has always been done on a very high professional plane and with superior journalistic acumen, for which the editorial staff deserves commendation and congratulations.

"Keep your fingers on the near things,
and your eyes on the far things."
— *Old North Country Saying*

Consistently throughout the life of the periodical, its staff has done just this. While its pages have been devoted primarily to assisting teachers in the field with their immediate problems, the magazine has never lost sight of the broader aspects of industrial education. The importance of purposeful goals has been constantly stressed. Nor has the necessity of a sound educational philosophy been neglected. The *Industrial Arts and Vocational Education* magazine has consistently displayed good sense in that it has never gone off on a tangent in any area, or buried itself in a single segment of the total field of industrial education, so that it could not command a comprehensive view of the total educative process. Very definitely there has been a wholesome balance between essential details near at hand and the ultimate objectives yet to be attained.

The periodical's leadership has continuously stressed the real value of an industrial education program where industrial-arts education and vocational industrial education are wisely articulated. The importance of each in relation to the other, as well as their relationship to general education, has long been recognized. Where they go hand in hand neither is singled out as all important. Each occupies a place of importance in the total field of industrial education. *Industrial Arts and Vocational Education* has long advocated articulation and not conflict between two closely related areas of subject matter with common techniques. Each has a contribution to make, which can, and should strengthen the other; they are components of each other. Wisely the magazine has supported such a concept, and accomplished much in unifying the thinking of educators in this regard.

Industrial Arts and Vocational Education constantly provides us with a historical account of our activities. Each current issue of the periodical soon becomes a chronicle of the past, recording for all time our milestones of progress. As we scan past issues of the magazine, we can see changes in the techniques and subject matter taught, as well as modifications in our goals in order that youth might better cope with the constantly changing times. We see a running account of the struggles between certain leaders in our field endeavoring to assert themselves, and that is as it should be in a democracy such as ours. New techniques, teaching methods, curriculum content, goals, and philosophies have constantly ensued from this crucible of discussion and even heated debate. Past issues of the magazine may well bring to light our failures as well as our successes, our wisdom as well as our shortsightedness, our sins of omission as well as commission, and our hopes as well as our dreams. It will always remain for future issues to tell posterity how well we succeeded.

From time to time direction pointers and even admonitions most judiciously formulated have made their appearance on the editorial page. And there have been occasions when we needed them. Pitfalls have been graciously pointed out; workable alternatives kindly suggested. It is to be hoped that whenever the editorial staff finds us behind the times they will so express themselves. At times we may have gone far afield from proved methodology, purposes, and philosophy appropriate for the times. Likewise, when we have forgotten that all that is old is not bad, and all that is new is not good, may the admonitions bringing us back to reality and practicability appear most freely on the editorial page.

Dealers and teachers alike owe *Industrial Arts and Vocational Education* much for the important service it renders them. Its pages constitute a meeting ground for buyers and sellers; teachers know where to go for supplies and equipment, and they can do so with confidence.

The publication's pages keep us informed regarding the vital activities of industrial education associations throughout our country. Concerted group action, so vital in a democracy, is well reported, thereby receiving its due share of well-deserved publicity.

Under the capable editorship of John Metz, the magazine has become a clearinghouse for that which is new and noteworthy in industrial education. A teacher has designed a new project, and he is

afforded an opportunity to share it with others. Due to real necessity, which is often the mother of invention, an instructor has constructed a useful piece of equipment. This too appears in print to be utilized by fellow workers. Then there are the leaders, tried and true, who take time to express their convictions founded upon years of devoted service in the field. On the basis of painstaking research, which should be more purposeful and better coordinated throughout the country, an investigator is enhancing the literature in the field of industrial education by a scholarly report of his findings. We who enjoy the privilege of contributing to *Industrial Arts and Vocational Education* have a very great responsibility. Not only are we helping our fellow teachers, but we are enhancing the respectability of our profession through our literary efforts.

Human interest stories rightfully permeate the pages of the magazine. We read about the beginning teacher, eager and full of expectation, reporting to his first teaching job. Others, with experience, are accepting assignments, more lucrative and proportionately more difficult, where the responsibilities assumed will be even greater. Then there is the leader whose life story makes its appearance, and who has resigned his position in order that he may enjoy a well-deserved rest after many strenuous years in the harness. There comes a time when a worthy colleague who has served faithfully and well passes on, and we mourn his departure. Because he has lived and served among us, those of us who remain are given an added impetus to do even better, those things that we do every day in the greatest of all professions — teaching.

Milwaukee Neighbors For Forty Years

WILLIAM F. RASCHE
Director, Milwaukee Vocational and Adult Schools
Milwaukee, Wis.

INDUSTRIAL ARTS AND VOCATIONAL EDUCATION, published by The Bruce Publishing Company, is a professional magazine that has served well the needs of administrators and shop instructors concerned with industrial arts and vocational education throughout the United States.

The Bruce Publishing Company was founded by William George Bruce, a civic leader and publisher who during his long useful life concerned himself with many civic and public enterprises of local, state, national, and international significance. He established his publishing company with the founding of the *American School Board Journal* in 1891.

The Birth of the Industrial Arts Magazine

The publishing business, started by Mr. Bruce, prospered and in later years undertook the publication of other educational periodicals. To his sons, William C., and Frank M., in time fell respectively the general editorial and business responsibilities of the publishing company their father had established. These two brothers gave ear in 1913 to the proposal of three educators concerned with practical education who "cherished the dream," as Edward J. Lake, one of them said, "of publishing a magazine devoted to art and manual training." The proposal was discussed at a luncheon meeting in Des Moines, Iowa, when the Western Drawing and Manual Training Association was in session there. Two other educators who were present at this discussion were Wilson H. Henderson, director of vocational education, Hammond, Ind., and Samuel J. Vaughn, head of the department of manual arts, Northern Illinois State Normal School, De Kalb, Ill. Mr. Lake was the head of the department of art of the University of Illinois at Urbana, Ill. William C. Bruce and Frank M. Bruce, like their father, William George Bruce, were enterprising men. They recognized the need for a magazine such as these educators envisioned, and approved the proposal to establish a magazine devoted to industrial arts and industrial education and found their father likewise receptive to the idea. Recognizing, too, that the necessary interest, enthusiasm, and energy to make the project successful would be likely to come from those who promoted the idea, namely, Lake, Henderson, and Vaughn, these men were asked to become coeditors of *The Industrial Arts Magazine*.

The first edition of the magazine was issued in January, 1914, forty years ago. For several months each year for ten years this group met on Saturdays, as Lake recounts it, "to submit, discuss, and formulate the contents of *The Industrial Arts Magazine*." Henderson and Vaughn were soon drawn into military service during World War I with resultant interruptions to the editorial board's Chicago meetings. These and other interruptions were overcome, however, and the publication of the magazine has continued from the beginning without a break. This is a mute testimonial to the foresight and soundness of the judgment of the founding group as well as to the editorial and managerial ability of The Bruce Publishing Company which underwrote the magazine.

At this point it should be noted that prior to the publication of the first issue of *The Industrial Arts Magazine*, William George Bruce through his many civic interests had become well acquainted with Milwaukee leaders in many walks of life.

Among the educators was Robert L. Cooley, the founder of the Milwaukee Continuation School, which was established in 1912.

The Early Vocational School Acts

Legislation passed by the Wisconsin Legislature in 1911 provided that in each Wisconsin city of 5000 or more people, a local board of industrial education was to be organized. Each such board was given the responsibility of establishing a continuation school for employed children 14 to 16 years of age who had not completed high school and to name a director to assume the responsibility of organizing and developing a continuation school for his community. The law made attendance mandatory for children working under permit. The required attendance was one half day a week during the regular school year.

This law was enacted pursuant to recommendations made by an interim committee that had been appointed by the Legislature in 1909. This committee consisted of the well-known legislative reference librarian, Charles McCarthy and four educators — President Charles K. Van Hise of the state university, State Superintendent of Public Instruction C. P. Cary, Dean Louis E. Reber of the University Extension Division, and Carroll G. Pearse, superintendent of the Milwaukee Public Schools. McCarthy drafted the recommendations after he had studied continuation, apprentice, and technical education in a number of European countries.

All industrial boards, in accordance with the 1911 legislation, consisted of five members. In each city required to establish a continuation school, the local superintendent of schools, ex officio, two employers and two employees composed the local board of industrial education. The members of the general school board named the appointive members of the board in rotation annually.

In his capacity as superintendent of schools, Carroll G. Pearse became a member of the first local board of industrial education of Milwaukee. On his recommendation Robert Cooley was selected for the directorship of the newly authorized continuation school for Milwaukee.

Mr. Cooley was a resourceful and able school principal in the city's elementary school system. This fact, together with his known ability to present his ideas forcefully in telling epigrams, led to his appointment to this important position. With energy and courage he undertook the task of founding a school that would be adequate to accomplish the purposes for which it was established.

At first the continuation school law was unpopular and generally misunderstood by employers, parents, and employed children. In time, however, it proved to be an educational boon and a civic blessing. In those days Bruce, Cooley, Pearse, and other men interested in Milwaukee's educational program met from time to time and sustained each other in the development of their several projects. They were good friends and neighbors.

Great interest was shown in the rapid development of the continuation schools which were located in two buildings. Of these one was established for boys in the Stroh Building and another for girls in the Manufacturer's Home Building. Both schools occupied the upper floors of these downtown buildings. Each building also housed light manufacturing plants on lower floors. Only a block away from the Stroh Building where the Boys Continuation School was housed, is the Montgomery Building. In this building 21 years earlier William George Bruce had begun publishing the *American School Board Journal*. In this building, too, the first issue of the *Industrial Arts Magazine* was published a year and a month after the two Milwaukee continuation schools had been established in December, 1912.

Besides continuation students the boys' school also received indentured apprentices. Two men who were to be identified with the school for many years who taught mathematics, science, and drawing to apprentices were John J. Metz and Robert W. Tarbell. Their duties put them in touch with young men who were learning their trades in the shops and manufacturing plants of industry or on construction jobs in the building trades. What they taught was soon tested by these learners where they were employed. Out of this rich teaching experience came the themes for many articles which these two men wrote jointly for the benefit of other apprentice teachers. The *Industrial Arts Magazine* became their vehicle of expression by which they passed on to others what they had learned "on the firing line" in teaching apprentices.

In due time the schools east of the river outgrew their quarters and the first unit of a new building was constructed at the southeast corner of Seventh and Prairie Streets west of the river. Prairie Street later was renamed Highland Avenue. The cornerstone of this unit indicates it was erected in 1918. A second unit was erected

Machine-shop work at the Milwaukee Vocational and Adult Schools
— Photograph submitted by Stanley O. Opsahl, teacher

in 1923. The third unit which completed the structure was finished in 1927. Both the boys and girls classes were moved to the new location. It was in the new location, too, as enrollments and the faculty increased, that these two instructors were promoted to supervisory positions. Each, too, was responsible for training teachers to develop curriculum and instructional materials as well as to supervise instruction.

World Wars I and II, economic changes, and technological advances soon changed the character of the students and the services of the continuation schools of Wisconsin. The Legislature strengthened the school attendance laws to increase educational opportunities for employed youth. The half-day attendance requirement for employed children 14 to 16 years of age was increased to one day per week. Later the age requirement was raised to 17 and still later to 18. Also, when children of these ages lost their employment they were required to attend school full time until such time when they secured other employment.

The Continuation School Changes its Name

This rapid change in strengthening the school attendance laws also came out of the fact that industry, business, and the people generally were realizing that education was becoming more important. The high school diploma rather than an eighth-grade certificate was considered a minimum essential for a job. Likewise, it was recognized the continuation schools by virtue of their favorable legal protection had been able to widen the range of their offerings and to put high quality into their practical instruction. Accordingly, the name "continuation" disappeared from the laws pertaining to these schools and a new name took its place, namely, *vocational*. Hence, the Milwaukee Continuation School was renamed the Milwaukee Vocational School. The industrial boards which controlled the continuation schools were likewise renamed and designated as boards of vocational education.

In the meantime the *Industrial Arts Magazine* had grown and was serving a larger number of readers. The need for a full-time editor became apparent. In 1927, just as the large six-story plant of the Milwaukee Vocational School had been completed, John J. Metz was invited to become the editor of the magazine to which he and Robert Tarbell had frequently contributed articles. He accepted this position and has served continuously for 26 years since his appointment. Although his new work necessitated leaving his position in the vocational school, the board of school directors some years later recognized his value to the vocational school and appointed him an employee member of the Board of Vocational and Adult Education. In this position he gave twelve years of valuable counsel and advice in the further development of the schools which are in the jurisdiction of this board. In his period of service as a board member a new school plant costing $1,750,000 has been constructed and a technical institute has been established.

The INDUSTRIAL ARTS MAGAZINE Also Changes its Name

Economic and technological changes, however, affect other institutions besides schools. They also affect industry and business. They affected The Bruce Publishing Company and the *Industrial Arts Magazine*. Just as economic and technological changes converted Wisconsin's continuation schools into vocational schools and compelled these schools to give serious attention to a more adequate program of vocational training, so too it became necessary for The Bruce Publishing Company to broaden the scope of the *Industrial Arts Magazine* and change its name. Therefore, in June, 1930, the *Industrial Arts Magazine* was renamed *Industrial Arts and Vocational Education*. Also, as The Bruce Publishing Company prospered, it found its quarters in the Montgomery Building inadequate. A building nearby was purchased and remodeled, now known as the Bruce Building. Here are centered the extended operations of this publishing firm.

Reference was made earlier to William George Bruce's broad acquaintanceship with businessmen, industrialists, and educators. Just as he was close to Robert Cooley in the formative days of the vocational school, so too was he close to the men in the general school system of the city of Milwaukee. It has been pointed out that he was the prime mover as a board member in the establishment of the South Division High School of Milwaukee. This school in its present location fifty years ago had a special four-story section devoted exclusively to manual training instruction in wood, metal, and mechanical drafting. It was here that the writer of this article received his first instruction in the use of wood and metalworking hand and machine tools as well as in the preparation and interpretation of mechanical drawings.

Local Friends of the Magazine

On Milwaukee's south side is also another important school. It started as a trade school in 1906 in a private plant under the auspices of a number of manufacturers. Two years later it was taken over by the school board. It became the city's Boys' Trade and Technical High School. This school has a long history of sustained and efficient service to Milwaukee industry. It, too, was one of the institutions in which Mr. Bruce took great pride. Men on its staff have been contributors to *Industrial Arts and Vocational* Education. Constructive articles have come from the pen of its present principal Fred W. Ziegenhagen.

South Division and Boys Tech., as it is commonly called, are, however, only two schools of Milwaukee's general system of elementary and high schools in all of which industrial-arts instruction is offered. Roy A. Radtke, director of industrial arts, has during a long career developed this field of instruction under three superintendents. He and some of his associates are among Milwaukee contributors of articles to *Industrial Arts and Vocational Education*. Mr. Radtke's articles centered largely on supervisory activities, shop and program modernization, and making layouts for new industrial-arts shops.

Another member of this system who has written productive articles is Alexander Bick. Mr. Bick teaches in the public schools of Milwaukee, Wis.; the Shorewood Opportunity School; he is special instructor at the Milwaukee Downer College; and summer school instructor at the Colorado State College, Fort Collins, Colo. He has written many articles on project design, and articles made of wood, metal, and plastics.

But there are other neighbors of The Bruce Publishing Company in the Milwaukee metropolitan community who, too, have appreciated the publication known as *Industrial Arts and Vocational Education*. They are the men in the high and voca-

tional schools of neighboring cities in the metropolitan area. Among these are Cudahy and West Allis, both manufacturing centers located in Milwaukee County. Frequent contributions from these two places have come from Louis Barocci of the Cudahy High School who has presented many articles on woodworking projects.

Roy Van Duzee, director of the West Allis School of Vocational and Adult Education, is well known for his work in the fields of safety, and tests and measurements, and has written many articles on these subjects.

Other contributors of the faculty of the Milwaukee Vocational and Adult Schools, besides Robert W. Tarbell, are William N. Lathrop and Joseph Barta who contribute professional articles. And, it ought to be added, that while this is no attempt to include all local men who have contributed over the years, one man, not a schoolman by profession but well known in the community as a commercial artist and as a great proponent of Boy Scouting, has been a constant contributor to *Industrial Arts and Vocational Education*. He is W. Ben Hunt of Hales Corners, Wis. He is a commercial artist, wood carver extraordinary, exceptional metalworker, and author of books on lettering, Indian and camp lore, Indian silversmithing, the making of bows and arrows, rustic furniture construction, and the building of log cabins.

In conclusion it may be said that many teachers in the elementary, secondary, and vocational schools of the Milwaukee metropolitan area who teach industrial arts and vocational subjects think of *Industrial Arts and Vocational Education*, their downtown neighbor, as a stimulating source for ideas and inspiration that has helped immensely in developing the community's program of practical education in the arts and skilled trades. For forty years publisher and editor of this practical magazine and the industrial arts and vocational education faculties of the metropolitan community have been good neighbors. On this anniversary occasion they join thousands of their professional fellows throughout the land in wishing ***Industrial Arts and Vocational Education*** continuing success in serving an ever growing number of readers devoted to the practical arts and vocational education.

A Salute to "Industrial Arts and Vocational Education"

RALPH E. PICKETT
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The first issues of this magazine came out in time to be on hand for World War I. At that time I had been taking night school courses in shopwork and it was from some of those teachers that I first learned about this publication. I like to think that one of the potent influences which shaped the decision of my lifework for me was this magazine and the obvious esteem in which it was held by those who later became my colleagues.

It was with a great deal of interest, therefore, that 15 years ago I read through the twenty-fifth anniversary number of January, 1939. It seemed to me then that this magazine had lived through one of the most critical quarter centuries in the history of our country, but more particularly in the history of our own professional existence. Perhaps it was prophetic, if not inevitable, that the start of the second quarter century should have been coincidental with the start of World War II. Three fifths of that second quarter century have now been completed. History may repeat itself, and if one were looking for historical parallels it would be no problem to dig them out, but it would be a rash man indeed who would undertake to be dogmatic over the relative importance of the one era as against the other. Who would say that the Smith-Lever Act of 1914, the Smith-Hughes Act of 1917, or any of the acts supplementary thereto had ceased to exert any effect upon our people, their education, or their economy? The lives of countless thousands of men and women have been influenced and they in turn have affected the economy of our nation and of nations far beyond our borders.

The onslaught of World War II found this country unprepared for war, but nevertheless in a position to achieve a miracle of production that not only confounded the enemy but also led to his ultimate defeat. Many of us in the fields of industrial arts and of vocational education know, from firsthand experience, the tremendous part which was played by men and women who had gone through classes conducted in public and private schools and who were ready, with but little additional preparation, to swell the ranks of productive labor almost overnight. We know also how important was the part played by countless others in uniform whose previous training had made them so much better prepared, or prepared so much more rapidly, for the so-called technical warfare. The teachers and the skilled workers who were prepared before 1939 were essential to the preparation of the

individuals who fought the war either in the factories or in the front lines. It was a continuing process in which both the trainers and the trained were essential. It has been a continuing process ever since. And in the 15 years since 1939 the magazine *Industrial Arts and Vocational Education* has become more strongly entrenched than ever as one of the most important tools with which instructor and student are enabled to carry on their respective tasks.

One who has grown gray in the service is perhaps entitled to speak feelingly of the tremendous contribution which this magazine has made. I surmise that my contemporaries still get the thrill that I get over the typical reactions of youngsters when they are first introduced to the pages of *Industrial Arts and Vocational Education*. There is another pleasure which we derive whenever we find one of these youngsters eager enough and good enough to prepare an article for publication and to have *Industrial Arts and Vocational Education* accept it. There has been an astonishingly large number of these future leaders which this magazine has been able to introduce to its public.

Figures of the Past and the Present

But the present leaders have not been forgotten either. There is hardly an individual of note in any of the fields connected with our work whose name has not appeared at some time or other in the issues of the past 15 years. The great figures of the past — those dynamic men and women who labored so heroically in the first quarter of the century — have, in many cases, ceased their labors. In all instances of the retirement or the death of these titans of a former era the pages have carried tribute to their achievements so that the younger generation might not be unaware of the debt that they owe to their predecessors.

A roster of the contributors to this magazine over the past 15 years would cover a goodly share of the greats and the near-greats in our fields. An analysis of the index would show an almost unbelievable range of timely articles and an almost infinite variety of projects — a coverage unmatched anywhere else in our literature. A good deal of the material would never have been made available to most of us had it not been for *Industrial Arts and Vocational Education*, as witness those historical sketches by William T. Bawden. Month after month the magazine has carried editorials that in the aggregate have been gems of the first water. And where else could we find such an extensive description of fine products as are each month so proudly advertised by practically every reputable manufacturer and distributor of the things we use in our schools. It is thoroughly understandable to us why our students use and reuse the various issues until the individual copies are worn to tatters. Thankfully, and with no thought of sacrilege, they refer to it is their professional bible.

A magazine, like any other institution, is a reflection of the people who have worked for it. *Industrial Arts and Vocational Education* has been exceedingly fortunate in the editors who, through the years, have been responsible for the high quality and the tremendous value of each issue. Rarely does one find prophecy, philosophy, and editorial acumen combined in such large measure in one small editorial group. The excellence of the magazine is truly a reflection of the ingenuity, the drive, the sound common sense, the inspiration, and the high professional standards of the various men who have steered the magazine since its beginning. I know that I speak for all of those in the profession when I attempt herewith to render tribute to the editors as well as to the magazine. They have been a marvelously helpful team to all of us, young and old, and as the forthcoming decade rounds out the second 25 years they will continue to enjoy our unbounded admiration and highest esteem.

Industrial Arts Past, Present, and Future

S. L. COOVER
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Industrial arts has made seven league strides during the past two decades and the promise is certainly for accelerated progress in the years ahead. It has passed through the painful years of adolescence and now stands on the threshold of maturity. It has finally broken the bonds which chained it to the practice exercise era of the past. But the transition from *tool processes* to *educational experiences* has not been an easy one.

The Manual Training Era

The teachers of the manual training era did not give up easily, in fact they did not give up at all. They simply grew old and retired while still defending the ramparts of practice exercises. And as incongruous as it seems the best ammunition for the defense of their fortress was provided by their severest critics, the frontier thinkers (too frequently impractical college professors) who tried to apply the then current educational theories to industrial-arts work.

The idealists lacked communication with the majority of the industrial-arts teachers because they talked and wrote in terms

which were more or less meaningless to them. Most, if not all of them, were not sufficiently skilled in any of the industrial-arts units to apply their theories in an actual teaching situation. But their most disastrous idea was to relegate shop and drawing courses to a minor position in the school curriculum. Since most of this group were academic minded rather than skill minded it was much easier for them to write about the impact of modern industry on an agrarian civilization than it was for them to learn even the simplest tool skill. The shop became the *laboratory* with all of its evils. The common connotation of a laboratory pictures it as a room supplied with a lot of expensive equipment which in theory was bought to be used by the students but in practice serves as a classroom where the teacher lectures with or without the aid of movies, where he gives an occasional demonstration, and once in a while the students themselves are allowed to work with the less expensive equipment to perform some innocuous experiment. Any satisfaction the student may have gotten from performing the experiment was dampened by the thought of and by the fact that he would have to *write up* his experiment in a suitable manual or notebook.

Unfortunately individuals are always victims of their own experiences and their own education. The teacher who had a journeyman's skill in any trade usually had obtained his teaching license by the addition of what he considered a few useless education credits. He likewise lacked the communication skills. However, his lack in this respect was probably a good thing because he neither wrote magazine articles nor made speeches if he could possibly avoid doing either. He ridiculed the ideas of the educational philosophers and felt sure that the educators with whom he associated were too impractical to make a living in the world of industry and commerce.

Industrial Arts Era

The industrial-arts philosopher's greatest mistake and the one for which he can hardly be forgiven, is that, in effect, he relegated industrial arts to a lower status than even manual training had ever enjoyed by his insistence that it was more or less an academic type subject and that the actual shopwork was merely incidental in explaining his *socioeconomic* theories pertaining in the greatest *technological society* that has ever existed. The Greeks actually did have a word for this unimportance if not actual hatred of shopwork. They called it, "Banausic."[1] This idea I repeat has done incalculable damage to effective industrial-arts programs in the United States.

Of course the fallacies of both positions are apparent to all of us today. If we are able to recognize the false ideas of both sides for what they are, growing pains or foibles of adolescence, we will be able to chart a true course for the future. But first we must see the entire picture in a better perspective than either of the positions outlined in the foregoing.

It seems incredible that for twenty years we have posed as philosophers and psychologists — at least we use the vocabulary of both — and have violated the basic precept of learning, i.e., it occurs as a result of an action on the part of the learner. During the same two decades in which we have attempted to wash our hands of the dirt and grime of the shop and have attempted — and would have succeeded had it not been for the perverse, unscientific, unreasoning attitude of the students themselves who like to work with tools and materials whether it is good for them or not — to make industrial arts another classroom subject. One in which the chief activities are practically indistinguishable from social studies.

Those of us who have tried to diagnose the ills of foreign economies usually come to the inescapable conclusion that the chief cause for their low standard of living is their inability to use tools to transform their raw materials into goods of commerce. And what is worse, there is a stigma attached to those who are able to use tools in most foreign countries.

It would be well for those of us who would make the academic phase of industrial arts more important than the skill phase to restudy our objectives. It is well worth noting that two of the nine universally accepted objectives[2] of industrial arts deal directly with the acquisition of skill and that the other seven depend for their fulfillment on the skillful use of tools and machines and the intelligent selection and use of materials.

The Future

What about the future? The dictum, *learn history or repeat its errors* applies with special emphasis to the two schools of thought delineated in the foregoing. No one in the future will ever confuse the 16 points of the Russian system with good industrial-arts teaching. As was stated before, most of these teachers have retired. Nor will anyone who knows the difference between a jack plane and a block plane entertain the idea that industrial arts is basically a social study. In the future we will simply take the best that each has to offer and fuse it into a well-integrated course of study.

I will outline here what is being done in a few outposts of enlightened industrial-arts teaching and predict that the general pattern with some improvements will constitute industrial-arts philosophy and practice during the next decade.

The social, the economic, the scientific, the artistic, the citizenship, and the exploratory aspects of industrial arts are being taught today in many places much better than was ever envisaged by the industrial-arts philosopher of a decade ago and they are being taught by, of all persons, those who are qualified to teach them.

Industrial-arts teachers are acutely aware of their students' deficiencies in mathematics and in basic science. They are also cognizant of the fact that we live in an industrial democracy and that a good citizen has many obligations to society that cannot be classified as skills.

But they also realize that our society has prospered through an intelligent division of labor and they have worked cooperatively with every other teacher in the school system to overcome ignorance of any kind. For example, before the beginning of school they find what mathematics will be presented to each grade in the coming semester and then furnish a few practical problems involving the principles to be taught. They also fortify the mathematics teacher's position and give mathematics a vital meaning to the student by introducing a few problems to the industrial-arts group which give added practice in handling the mathematical principles that are being taught concurrently in the mathematics classroom. The same idea is being followed by the teachers of science, geography, social studies, art, and the like. We have found that the teacher of industrial arts must always take the initiative in this matter and also that occasionally one or more of the academic teachers will not co-operate. But the non-co-operative academic teachers like the manual training teachers are getting old and will soon be retired.

Today in these same schools, a greater number of skills are being taught and the students are doing a much better job than was ever envisaged by the old-time manual training teacher in his most optimistic reveries. How is this being accomplished?

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[1] Bennett, Charles A., *History of Manual and Industrial Education up to 1870* (Peoria, Ill.: The Charles Bennett Company), p. 15.

[2] Groneman, Chris, *et al.*, *Improving Instruction in Industrial Arts* (Washington, D. C.: The American Vocational Association, 1953).

The competent teacher sees his job in its proper perspective and joins the other members of the staff in trying to educate the "whole boy." And since he is not browbeaten by the intellectuals into feeling that he should be an authority on the teaching of mathematics, science, social studies, and the like he has time enough to devote to his own subject matter and to make a success of his teaching.

He has found better and more economical ways to present industrial-arts subjects. Most good industrial-arts units have an adjoining demonstration and visual education room. They also have a library for both browsing and for serious reading.

But, perhaps, the thing that has helped industrial arts most in the past few years has been the new concept of industrial-arts drawing. Most of us have finally accepted the fact that the old type mechanical drawing was worse than useless because it was entirely foreign to the work that the student was carrying on in the school shop or in his own home workshop and it was practically 100 per cent practice exercise work.

In most places today drawing is presented as a living language. In the junior high school it consists of reading simple blueprints, of making sketches, and of making blueprints from drawings or sketches for shop use. At the advanced levels mechanical drawings of intelligible objects are made. Drawing has become planning in the true sense of the word. The old *plates* had no excuse for existing except as a sort of an exercise in torture and they are fast disappearing from the educational scene.

We have made great material progress especially in architecture and in equipment. Those who believe that a shop is a place to work with tools, materials, and equipment have used these better facilities to excellent advantage. Those who incline to the social studies approach, at least, have better movie projectors and more comfortable seats for viewing the show and for listening to the teacher tell about the occupations of mankind.

Space does not permit the enumeration of all of the changes to be expected in the next decades but, perhaps, the most significant of all, and the last to be presented here, concerns evaluation.

We are finally coming to realize that true evaluation does not consist of periodic grading by the teacher. It is apparent to all thinkers today that the best evaluation made of a project, a drawing, or a term paper is the one made by the student who did the work. All other evaluations are superficial in the student's eyes. Most of the time he does not believe them to be fair and honest. And since teacher-allocated grades are frequently used either as a punishment or a gift the student may be right in his belief or rather disbelief in grades.

The newer method of student evaluation of his work requires a carefully planned check sheet listing the exact factors to be graded in the project or in the drawing as well as graduated samples of similar work for the purpose of comparison. This self-evaluation actually sets up a teaching and learning situation which cannot be approached by the older methods of grading.

It is here that our professional publications will find their greatest field of service. I should like to point out that during my own three decades of industrial-arts teaching (from the manual training to the atomic age) I have received the ideas which I consider the most helpful from *Industrial Arts and Vocational Education* magazine. It has been a monthly stimulus to thoughtful industrial-arts teaching. When I began to teach I looked eagerly forward to receiving teaching ideas and projects in each issue of the magazine. later I was thrilled to find that some of my own projects were worthy of publication and today in teacher education we find it our most valuable single source of everything pertaining to industrial arts, from projects to philosophy. Many of our students have a complete four-year file of the magazine when they graduate. We feel sure that *Industrial Arts and Vocational Education* will serve the profession as well in the next forty years as it has in the past forty.

Turning More Pages

HOMER J. SMITH
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An abbreviated listing of items that appeared in "Industrial Arts and Vocational Education" from 1938 through 1953

For the January, 1939, issue — *the 25th Anniversary Number* — of this magazine, the author prepared three pages of notes attempting to highlight the major items that had been shown in its pages from its beginning. The request to continue this searching through an additional 15 volumes was appreciated because of the favorable comments of many readers in the first instance. Men had their memories refreshed, they said, deriving pleasure mixed with sadness from the review.

The present listings have been fashioned after the earlier ones, except for two types of omission. The encouraging number of technical books appearing on the market and the places and presidencies of our professional associations have been passed by. It seems appropriate here to repeat the introductory paragraphs of the 1939 issue.

It has been truly pleasurable to canvass the contents of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION, from its beginning to date, and to make some notes of interest. The items here shown are offered in the hope that many others will enjoy them and that none will accept them as full and fair historical record. No sources other than the volumes have been used, no great amount of time has been expended, and meticulous care has not been taken.

Undoubtedly, many major events have escaped mention, and certainly, a host of worthy entries were missed in the hurried scanning. We have here merely a miscellaneous gleaning of persons, places, writings, and occasions without guarded pattern. Our memories should be refreshed about our friends, what they were doing and thinking about, and the contributions they have made as the 25 years have sped. It is the hundreds of little incidents, often chance and always intertwined, that make the living stream of any movement.

What better place and time to express appreciation for the services rendered, through this magazine, by The Bruce Publishing Company, by the earlier leaders, and by John J. Metz, whose period of continuous responsibility in editorship has already become of major extent! What better place and time to pay our respects to authors of the longer articles of professional substance and to those who have prepared the brief, specific, and practical parts that are nearer to a teacher's work! And the advertisements in great variety, what of them and their sponsors? And what of the special pages that come directly from the editor's hand?

The issues of *Industrial Arts and Vocational Education*, as they arrive, become so much an element or factor in our working lives that we tend to fail to sense the total contribution and effect. There is much that is merely current, of course, but there is permanent material in large amount. The journal is, in fact, a moving coverage of the field or movement — steady in its showing of our philosophy and practice, our trials and successes, our facilities and procedures.

Forty volumes on our shelves mean that thousands have expressed their thoughts and offered us the cream of their administrative, supervisory, teaching, and teacher-training experiences. *Forty volumes* mean that a prodigious amount of exacting editorial effort has been expended, that younger writers have been encouraged, and that enrollees in our preparatory and upgrading institutions have at hand an important, compact, and convenient reference aid. *Forty volumes* mean that we have a history and, therefore, a chart and guide for the future. We should develop respect for our past and be grateful to those who have produced the record.

LOOKING BACK OVER THE VOLUMES FROM 1939 TO 1954

1939

Patterson on apprenticeship, and Claude on progress of school shops.

American Industrial Arts Association instituted at Cleveland N.E.A.

Bedell on budgeting, Radford on testing, and Parry on integration.

Gunn of Wisconsin dies, and Paul of Kansas.

Anna Lalor Burdick retires from the U. S. Office.

Giachino's self-rating scale for teachers, and Newkirk's description of his industrial-arts laboratory plan.

Van Duzee on planning and equipping, and Moore on trends.

Hippaka and Carver to Ames and Barich to Mount Pleasant.

Smith on aims and types of industrial education.

Schneider, of co-operative training fame, passes away.

1940

Diamond's series of lessons for young workers.

Friese — *Course Making in Industrial Education.*

Brace of St. Paul retires, and Hundson of San Antonio.

Stockwell dies, and Lake, also Elizabeth Fish of Minneapolis.

Cooley resigns, and Rasche succeeds.

Struck on creative shopwork, Rasche on the industrial-arts curriculum in the social order, Hughes on safety teaching aids, and Sowers on guidance.

Badger to Portland, McHenry to Tulsa, and Jones to the University of Pennsylvania.

Death takes Smith of Michigan and Brandenburg of Kansas.

Williams — *Exploring the Arts and Industries.*

Curran of Stout resigns, and Laubach of Terre Haute with Yager succeeding.

Castle on terminal courses, Baxter on gem cutting and jewelry.

Lee Becomes Dean of Education at U.C.L.A.

Ashley on the general shop, Leasure on pupil-rating cards, Reagh on trends, and Silvius on project planning.

1941

Selvidge passes away, and Comfort of Detroit.

Stanley Pawelek to Baltimore, and Perry to Greeley.

Cushman — *Training Procedures.*

Newkirk — *Integrated Handwork for Elementary Schools.*

Claude on the status of woodworking, Bowman on graphic aids, and Bedell on functioning education.

Newton of Winnipeg retires.

A.V.A. report on vocational school graduates.

Van Duzee on safety, Coyte on visual aids, McHenry on co-operative training, and Radtke on in-service training for industrial-arts teachers.

Hawkins on vocational training and defense labor supply.

Brennan on measurement, and Struck on contributions to national defense.

Mesereau — *Materials of Industry.*

Fryklund from Wayne to Minnesota, and later to Fort Knox.

1942

Dalton appointed at Michigan, Paine of the University of Toledo to the University of Cincinnati.

Myers of Michigan retires.

Brace of St. Paul dies, also Bell of Illinois, and Whitesitt of Pittsburg, Kans.

Bawden's tribute to Charles A. Bennett.

Coltharp on textbook evaluation, Allen on teacher certification, Micheels on state supervision, and Pawelek on teacher preparation.

Ben Hunt's series on whittling techniques, and Osburn's on design.

Conner's tribute to Josef Sandberg.

Van Deusen of Kent retires, and Barich succeeds.

Fryklund — *Trade and Job Analysis.*

Breneman — *Strength of Materials.*

Karnes on the demonstration, Karch on graphic-arts occupations, Grinstead on the experimental attitude, and Silvius on pupil personnel organization.

Patlow on war production instructor training, Jochen on work habits and attitudes, and Fehr on duties of directors of vocational education.

Schmidt on workshops, Hill on grade pupil interests, and Rasche on the vitalizing of elementary and secondary education.

Fryklund succeeds Bawden as permanent chairman of the Industrial Arts Conference of the Mississippi Valley.

Hill and Ewing — *Materials and Methods of Vocational Teaching.*

1943

Hughes to the National Safety Council in Chicago.

Estabrooke and Karch — *250 Teaching Techniques.*

Schweickhard becomes Commissioner of Education in Minnesota.

Bedell on the wartime training of women, Caveny on training schools at Navy Pier, Reagh on the supervisor's point of view, and Novak on related instruction.

Mays and Casberg — *School Shop Administration.*

Fryklund and Sechrest — *Materials of Construction.*

Groneman's series on teaching materials, Mays on the skilled mechanic and industrial trends, and Roberts on the relation of industrial arts to the war effort.

Seidel's bill of rights for postwar youth, and Paine's project-rating scale.

Siro on performance tests, Freeman on training elementary industrial-arts teachers, and Van Duzee on offerings in small high schools.

Aiken and Lilly — *Teacher Training for Industry.*

Pickens on in-service teacher training, and Beach on selection of pupils for vocational-industrial schools.

1944

Hambrecht of Wisconsin dies, and Struck of Pennsylvania, also May of Kentucky, Beswick of California, Wahlstrom of Illinois, and Trybom of Michigan.

Groneman and Williams — *Exploring the Industries.*

Tarbell's tribute to Cooley, and Smith's coverage of Prosser's contributions.

Bailey's series on design.

Roberts succeeds McHenry at Tulsa, and Greiber follows Hambrecht as state director in Wisconsin.

Death comes to Anna Lalor Burdick.

Bricker on developing an industrial-arts program, Fern on area vocational schools, and Novak on vocational school admission standards.

Begeman becomes Supervisor in St. Louis.

1945

Hornbake to the University of Maryland, Fox from Jackson to Kalamazoo, and Bowler to the University of Texas.

McKinney becomes President of the American School.

Bawden retires at Pittsburg, with Hankammer succeeding.

Thiede of Mankato Teachers College killed in crash of navy transport plane.

Nelson of Stout retires and Fryklund becomes president.

Allen, Hambrecht, and Welch — *The Instructor, The Man, and The Job* (revised).

Crawford on guidance, Planty on supervisory training, Rose on teaching techniques, and Caveny and Weichelt on reliability of shop grades.

We lose Sowers, Newell, Kunou, Van Deusen, and Bauersfeld, as well as Ed Cherry and Roberts of Rochester.

Parker of Kansas retires, and Christy of Cincinnati, also Rusch of Oklahoma City.

Weaver on teaching aids in vocational education, Ashley on co-operative relationships, and Ross on aptitude tests for placement of industrial trainees.

Bollinger and Weaver — *Occupational Instruction.*

Struck — *Vocational Education in a Changing World.*

Ziegenhagen becomes principal of Boys Tech in Milwaukee.

Prosser retires at Dunwoody, with Kingman as successor.

1946

Wills on guidance through industrial arts, Broadhurst on prediction of success in vocational courses, and Rathbun on the legal and moral aspects of safety education.

The George-Barden Act.

A.V.A. bulletin — *Improving Instruction in Industrial Arts.*

Rowntree to Penn State, Wenrich to the Michigan directorship, Estabrooke to American Technical Society, Gilker to David Rankin in St. Louis, Oakley to Murray Teachers College, and Finsterbach to Buffalo Teachers College.

Hobdy of Alabama retires, and Markham of Kansas, also Ash of the University of Pennsylvania.

Hippaka on the selection of teacher timber, Gotschall on a comprehensive industrial-arts program, Boodish on vocational supervision, and Paine on foremanship and the conference method.

Allan Backus dies, and Averill of the U. S. Office, also Rose of Rhode Island.

J. C. Wright retires as U. S. Asst. Com. for Vocational Education, succeeded by Gregory.

Reese becomes supervisor in Ohio.

Cribbs on qualifications and functions of the industrial training staff, Ketcham on expansion of the industrial-arts program, Schmidt on the pupil-participation program, and Finsterbach on equipment for comprehensive general shops.

Wendt makes historical review, and London and Hostetler look ahead.

1947

Newkirk — *Organizing and Teaching the General Shop.*

Patterson and Hedges — *Education for Industry.*

Friese — *Course Making in Industrial Education.*

Rakestraw — *Training High School Youth for Employment.*

Hippaka on public relations, Silvius on functions, Wilson on earmarks of a good teacher, and Mathison on co-ordination of related instruction for apprentices.

Wall to the University of Maryland, Williams to Cape Girardeau, Pederson to Platteville, Harlan to Buffalo, T. C. Bicknell to Southern Illinois University, and Brophy to Cornell.

McCrae retires at Muskegon, and Schmidt succeeds Sink at Ball State.

Siepert of Bradley dies, and Strickler becomes dean.

The Bawden series on the lives and accomplishments of our leaders.

Graham of Madison dies, and Whitcomb of Miami University.

Hankin on student characteristics and progress, Jones on supervision, Reynolds on high school industrial-arts credit, Yager and Schmidt on shop planning for the small high school, and Diamond on vocational education and society.

Earhart's report on the certification of vocational instructors.

U. S. Office bulletin — *Vocational Education in the Years Ahead.*

The Prosser Resolution, and the Life Adjustment Education program.

1948

London on laying out a one-teacher industrial-arts department, Johnson on general shop organization, Micheels on course building, and Diamond on the difficulties of beginning teachers.

Mays — *Principles and Practices of Vocational Education.*

Wilber — *Industrial Arts in General Education.*

Keller — *Principles of Vocational Education.*

Karnes to the University of Illinois, Gallington to Penn State, Hostetler to the University of North Carolina, Kinker to Indiana University, and Melton to Kansas State Teachers College.

Randall of Kenosha dies, and Friley of Pittsburg, Kans., also Roberts of Tulsa.

Ludington moves up to the U. S. Office of Education, succeeding Proffitt.

Monroe becomes chairman at Santa Barbara, and Torgerson at Bowling Green, Ohio.

Mays on graduate study in industrial education, Patterson on apprenticeship, Smith on college credit for industrial experience, and Silvius on safety activities.

Land's evaluative criteria, Eastman's shop-planning check list, and Barich's pattern for the elementary school.

C. M. Miller looks at "Yesterday, Today,

and Tomorrow in Vocational Education."

The Manual Arts Press becomes Charles A. Bennett, Incorporated.

1949

McNamee of Chicago retires, also Craigo of Dunwoody in Minneapolis.

Highlen joins the Purdue faculty, and Rose goes to the Bureau of Naval Personnel in Washington.

Jarvis on evaluation of test results, Baysinger on school shop safety, and Pickett on technical institutes.

Ward — *Out of School Vocational Guidance.*

Weaver and Bollinger — *Visual Aids: Their Construction and Use.*

Newkirk and Johnson — *The Industrial Arts Program.*

Tibbitt's training course for conference leaders, and Bawden's criteria for the selection of places for graduate study.

John Callahan of Wisconsin retires.

Baker of Stout dies, and Anthony of Fitchburg State College.

Bennett on industrial arts in the Canadian provinces.

Wilson on apprenticeship, Parkes on the work of department chairmen, and Land on establishing relationships.

Industrial Education Supervisory Conference begun at Bradley.

1950

Roberts of Cleveland passes, and Wheeler of the University of Georgia, also Brown and Green of Stout.

Dennis retires as executive secretary, A.V.A., succeeded by Mobley.

Simon leaves the Illinois directorship for a position at Carbondale.

Day to Butler Manufacturing Company, and Gunderson to Kennicut Copper.

Goldberger of the University of Pittsburgh retires, and Smith of Ohio State.

Wenrich to the University of Michigan, and Siro to Chico State College.

Hunt on the master's degree for industrial-arts teachers, Hornbake on life-adjustment education, and Hauer on trends in vocational-technical institutes.

Arthur Dean, formerly of Columbia, dies.

William T. Bawden retires from Kansas State Teachers College.

Hankin on the characteristics of private trade school instructors, and Nihart on the importance of skill.

Mays on the historical aspects of the general shop, and Anderson on the industrial-arts teachers of Wisconsin.

Wilber tours industrial-arts teacher-training institutions, and Ewing moves to Honolulu.

A.V.A. bulletin — *Studies in Industrial Education.*

Hass and Ewing — *Tested Training Techniques.*

Prosser and Quigley — *Vocational Education in A Democracy* (revised).

McCarthy — *Vocational Education: America's Greatest Resource.*

1951

Wright on planning the comprehensive general shop, Mathison on testing apprenticeship applicants, Wilson on textbook utilization, and Greiber on post-high school vocational education.

Wilson becomes State Commissioner of Education in New York.

Ericson tours industrial teacher-training institutions.

Furney of New York retires, also Shay of Massachusetts, Tustison of Stout, Weber of South Bend, and Reagh of Grand Rapids.

Death comes to Wood of Indiana and Love of California.

Bawden — *Leaders in Industrial Education.*

Micheels and Karnes — *Measuring Educational Achievement.*

We lose Wilson Henderson, also Hawke and Rakestraw of the U. S. Office.

Groneman on school shop safety, Waltrip on design, construction, and location of toolholders, and Siro on preparation and upgrading.

Nihart on industrial arts in elementary schools, Reynolds on public relations, and Novak and Scheuhing on predicting success in high school industrial courses.

Refinishing picture frames in the home-mechanics laboratory, Chicago Public Schools
— Louis V. Newkirk

Alan Pawelek to the leadership at Bellingham, Wash.

Lowry from Texas State Directorship to a Deanship at Sam Houston State College.

Ivins and Runge — *Work Experience in High Schools.*

Hawkins, Prosser, and Wright — *Development of Vocational Education.*

1952

Dick on safety, Ruley on responsibilities, Luchsinger on co-operative training, and Mays on standards of achievement.

Kleinfelter of the U. S. Office passes, and Byrn of the University of Michigan, also Simpson of the Charles A. Bennett Company, Stier of Los Angeles, and Bauder of Philadelphia.

Dean Bowman of Stout retires, succeeded by Jarvis, also Wagner of Newark, Getman of New York, and Mays of the University of Illinois.

Kinker on lesson plans, Wilson on trade tests, Fryklund on teacher-training accreditation, and Wall on requirements for industrial-arts teacher education.

Price from Terre Haute T. C. to the University of Cincinnati, and Tischendorf to the headship at Kent.

Barich to the managership of Industrial Arts Awards, Ford Motor Company.

David Snedden, formerly of Columbia, dies in California.

Hill succeeds Simon as state director in Illinois.

Strobel becomes Asst. U. S. Commissioner for Vocational Education.

Mays — *Essentials of Vocational Education.*

The passing of Charles A. Prosser.

1953

The passing of Leavitt and Cushman.

Frank Bruce of Milwaukee dies, and Groshong of Portland, Ore.

Hauer on human relations and learning, Wilson on advisory committees, Ambrose on shop discipline, and Baysinger on teacher-student relationships.

Nihart of Los Angeles retires, and Elliott of Peoria, also Kent of Newark.

Welch of Madison moves to the University of Florida.

Seefeld assumes the leadership at Santa Barbara College, Strickler joins N.A.M., and Leighbody becomes Assistant Commissioner in New York.

Friese on analysis of course materials, Rowntree on related instruction, and Terry on the follow up of co-operative part-time pupils.

A.V.A. bulletin — *A Guide to Improvement of Industrial Arts.*

State Leadership in Industrial Arts

ROY G. FALES

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Teachers, supervisors, and teachers' college personnel of the entire country salute the INDUSTRIAL ARTS AND VOCATIONAL EDUCATION magazine on this, its fortieth anniversary. All acknowledge the foresight and sound educational policies which it has always fostered and its fine forward-looking recognition of important research while serving the everyday needs of teachers. This leadership has been well directed.

During this period of time another kind of leadership has been developing. Out of the wreckage of the manual training era came leaders of the vocational movement and a concept of a relatively new type of education.

The vocational leadership came from the ranks of manual training and from the two-year technical schools of higher education. Some of it came from the trades. There were men of trade skill having splendid leadership ability. The individuals from these groups combined their strength to develop the vocational and technical public schools and classes with the aid of the Smith-Hughes legislation.

Prior to the rapid decline in manual training Frederick G. Bonser, Dean Russell, and David Snedden of Teachers College, Columbia University, New York City, and others began to formulate and publicize a concept of industrial education which had been enunciated much earlier by Sheldon, Woodward, Dewey and even back to Pestalozzi.

These farsighted educators succeeded in developing the industrial-arts idea of shop experiences of a general education nature for all school pupils. The elementary work for grades one to six, the junior high school work for grades seven through nine, and the senior high school ideas were educationally sound. All three levels of industrial-arts work have developed and are growing in all parts of the country. All evidence points to a continued movement in the directions started by these truly great leaders.

The ideas set forth for the elementary school were based upon child development or psychology, known principles of education, and the evolving patterns of society and industry. For all practical purposes the home industries had been transferred to a factory. Less and less industrial or craftwork was done in the home with the result that children were removed ever further from intimacy with raw materials and the methods of converting them into consumer products. The child was thus thrust into a "ready-made" world of great utilitarian value but with little "know-how" or real appreciation.

Industrial Arts in the Elementary, Junior High, and Senior High Schools

The elementary school is still conceived as the period in which the tool subjects are learned. Many educators also expect the school to help the child make his adjustment to his environment. He uses paper, pencils, ink, and books continuously in school. He is always surrounded with clothes, a home, furniture, machines, mechanical devices, electrical appliances which are enigmas. Soap, prepared foods, electricity, newspapers, and mail is delivered to the door. To correct this condition, pupils are encouraged by the classroom teacher to construct and build in a child-like or possibly primitive way many of these and other articles. Or the class studies the community and in doing so builds a small floor model of the community as it is or as they think it should be. All of this in the classroom or a supplementary workroom opens the mind to better, richer living and understanding.

The junior high school grades assume a slightly different approach. Here pupils are living in a greatly expanded world. It is no longer confined to the neighborhood. The community, the state, the country, and the world are viewed by him. The desire to work with materials and tools of industry is still present. Great satisfaction is usually derived through making an article. Three great objectives come into focus: the desire to experience (construction), the increasing desire to isolate some kind of work which is satisfying (exploratory), and a desire, sometimes underappreciated, to receive value for money expended (consumer education).

The first of these, experience, building, a putting together, is easily found in a comprehensive general shop course. The second (exploration) becomes real when through the several experiences the pupil finds a kind of work which is interesting above all else. The third, his money's worth (consumer education), is realized through learning to know by first-hand experience and study the qualities of materials and standards of workmanship as well as through a study of industrial products. Knowing these things and having experienced them, pupils learn to like or dislike a kind of work, and they can learn to become observant when purchasing and using the products of industry.

Senior high school objectives and practices embody to some extent the junior high school practices. The broad and rich content remains but the pupil's interest in execution is usually sharpened. Courses remain general but to a lesser extent. The general values are still retained for many and others who are in a fortunate location may transfer to a vocational course. When this is not possible the industrial-arts teacher helps individuals to progress in skill and knowledge to the limit of facilities.

Parallel with these movements in education there has developed a new kind of leadership. At first only in the state of New Jersey was there a state supervisor of industrial arts who was responsible for the promotion and development of this work. New York State soon appointed a part-time supervisor of industrial-arts work. It was not, however, until 1929 that this position was converted into full-time work. Both of these positions were developed in the vocational division of the education departments, thus maintaining a close kinship and bond of understanding between the vocational industrial and the industrial-arts general education efforts. Nevertheless, the two types of education

gradually assumed distinctive characteristics and as such are expanding and developing.

State Supervision of Industrial Arts

Since 1940 ten states have created new positions for supervision of industrial-arts education. Among these states are California, Connecticut, Illinois, Indiana, Louisiana, Missouri, Ohio, Texas, and Utah. The most recent addition to the growing list of state education departments that recognize industrial arts is Georgia, where a new supervisor of industrial-arts work was appointed to the vocational division in the spring of 1953. This ever growing list of new positions has not yet ended. It will continue to grow as men prepare themselves for these positions and as strong leadership develops on a state-wide basis.

State supervisors of industrial arts travel extensively within a state. They visit schools as consultants to boards of education and school executives who need help and assistance in this new type of education which many have never experienced and which administrators cannot be expected to know as well as a supervisor. They help in planning and organizing new shops in new school buildings or in planning the reorganization of an old shop. Equipment lists, shop floor layouts, and courses are among the aids they can furnish.

To the teacher they are also friends and advisers. When visiting the shop they usually see something good, new, or different which can be passed along to another school. They likewise bring fresh thoughts and suggestions. Not holding the teacher paycheck makes it possible for them to use a professional approach to the teacher, thus allowing a free discussion of practices and policies.

Visitation in large numbers of shops gives them a perspective which enables them to evaluate methods of teaching, work standards, shop equipment and conditions, and instructional organization. These all lend themselves to verbal or pictorial description which can be put in bulletin form for distribution.

Personal contacts made through conferences are very effective. Workshop conferences pertaining to methods, curriculum, courses of study, shop organization, teacher education, supervision, and leadership all tend to strengthen the professional characteristics of industrial-arts work. Such conferences can be called at any place in a state to bring a special problem into focus. This technique is particularly helpful to administrators, teachers, and indirectly to the boys and girls of the state. It upgrades the teaching of industrial arts.

Because of the records achieved by state supervisors and because this school subject needs attention of a person who knows materials and tools of industry we may look forward to an increased number of state supervisors in years to come.

Progress at Mid-Century

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By the turn of the twentieth century such pioneers as C. M. Woodward, of the Engineering Department of Washington University, in St. Louis, and Professor D. Runkle, president of the Massachusetts Institute of Technology, had interpreted needs for industrial handwork in American education. It was first produced in scientific and technological schools before it was advocated for boys on the high school level. By 1900 St. Louis, Chicago, Baltimore, Cleveland, Philadelphia, Denver, New York, Albany, Omaha, Washington, Indianapolis, St. Paul, and others, had manual training high school programs. Manual training was cut from the heart of two European systems; the first of these was Swedish Sloyd, a highly organized handwork program, planned essentially for primary and grammar schools, with every completed piece a useful article. Then there was the Russian system, based on an analysis of the operations in manipulative work with little regard for having the student build useful objects. Many older men now living still remember the woodworking joints that they made in manual training classes. Formal discipline and the transfer of training were advanced as the justification for this type of education. The teachers were tradesmen with very limited professional training who were taught this system by rote and were told to teach as they were taught. Manual training in the American high schools was based on the common crafts of the day: carpentry, woodturning, patternmaking, iron chipping and filing, forge work, brazing and soldering, and the use of machine tools.

Industrial-Arts Education Introduced With the Junior High School

With the advent of the junior high school movement in 1912 exploration and life experience programs were advocated. Such leaders as Earl L. Bedell of the Detroit schools, had the vision to place the emphasis on an understanding of industrial technology and add other types of work to woodworking and mechanical drawing which had become the two major activities for junior high grades. This was the beginning of the transition from manual training to industrial arts. The general education values of industrial arts were clearly enunciated, especially as they differed from education for industrial-trade training. The general shop type of organization came into being, and no longer was the tradesman considered successful as an industrial-arts teacher. It was understood that industrial arts could only be taught by the professionally trained teacher.

Preparation for Employment Considered a School Function

It was in 1906 that Dr. James P. Haney, director of the Manual Training School in New York City, and Professor Charles R. Richards, then at Columbia University, called together persons in the New England area interested in the development of industrial-trade education. About 250 persons attended this meeting at Cooper

Union in New York City. At this gathering the National Society for the Promotion of Industrial Education was organized with these aims:

> To bring to public attention the importance of industrial education as a factor in the industrial development of the United States; to provide opportunities for the study and discussion of the various phases of the problem; to make available the results of experience in the field of industrial education, both in this country and abroad; and to promote the establishment of institutions of industrial training.

Since the Midwest was not served by this national society the leaders of the Mississippi Valley organized the Vocational Education Association of the Middle West in 1914 with aims paralleling those of the National Society. Dr. Charles A. Prosser became executive secretary of the National Society, and encouraged these two groups to work together in promoting legislation for the development of vocational education; this effort culminated in the passing of the Smith-Hughes Act in 1917. In 1926 these two organizations were merged to become the American Vocational Association. Since that time the leadership of the AVA has been successful in influencing Congress to pass subsequent legislation to supplement benefits available from the Smith-Hughes Act. At this date there are the George Barden and Smith-Hughes Acts that provide in part, for the promotion and development of vocational-industrial education in the public schools of this country.

The Growth of the Teacher's Colleges

By 1910 there were a few institutions such as The Stout Institute (1903), Michigan State Normal (1849), New York State College for Teachers at Oswego (1844), and Bradley Polytechnic Institute (1897) preparing manual training teachers. These were two-year curriculums with a high percentage of the time devoted to manipulative skills. Obviously there was little time for professional courses in these curriculums. In a half century the industrial teacher education departments in the colleges and universities of this country have grown from this meager beginning to 203 in number. By 1925 many had organized majors in industrial education leading to college degrees. Graduate programs emphasizing research and scholarship were being announced as early as 1920. By 1930 it was apparent that the master's degree was becoming a requisite for promotion and leadership in many school systems. Doctoral programs with majors in this field have now been developed in many of the larger universities of this country. A high percentage of four state, national, and local leaders have taken advantage of these programs to prepare for leadership.

The Magnitude of the Profession

Dr. John Ludington, Specialist in Industrial Arts Education, in the U. S. Office of Education, estimates that there are 20,000 full-time and from 5000 to 10,000 part-time industrial-arts teachers in the public, private, and parochial schools of this nation. It has been estimated that there are 15,000 teachers and co-ordinators of federally-aided trade and industrial classes. The American Society of Training Directors, whose membership is composed of those who are operating educational programs in industry, has indicated that they have at least 3000 persons in industrial-training programs. There are roughly 4000 persons at work teaching technical subjects. It is therefore a conservative estimate that there are more than 45,000 persons teaching some form of general or vocational-industrial education in the United States. These teachers and leaders support such national and regional professional organizations as:

- American Apprentice Round Table
- American Council on Industrial Arts Teacher Education
- American Council of Industrial Arts Supervisors
- American Industrial Arts Association
- American Society of Training Directors
- American Technical Education Association
- American Vocational Association, Industrial Arts Section
- American Vocational Association, Trade and Industrial Education Section
- Four-State Regional and Industrial Education Conference
- Mississippi Valley Industrial Arts Conference
- National Association of Industrial Teacher Educators
- National Council of Local Administrators of Vocational Education and Practical Arts
- New England Industrial Arts Association

In addition to these regional and national organizations are the many local and district associations in each of the states. These teachers also participate in such honors groups as: EPSILON PI TAU, IOTA LAMBDA SIGMA, MU SIGMA PI, and the like.

The Industrial Education Literature

The reading interests of industrial educators include: the INDUSTRIAL ARTS AND VOCATIONAL EDUCATION magazine, the *American Vocational Journal, The Industrial Arts Teacher, School Shop,* and the many state professional journals. A recent bibliography of professional books having to do with philosophy, theory, and organization of industrial education lists 92 titles.[1] These books date from 1910 through 1952. Thirty-nine or 42 per cent are marked with an asterisk indicating that they are now out of print and are no longer available from the publisher, but may be secured for historical studies in the larger American libraries.

NUMBER OF SIGNIFICANT PROFESSIONAL BOOKS IN INDUSTRIAL EDUCATION PUBLISHED SINCE 1910 IN TEN-YEAR PERIODS

Decade	*Number Published*
1910–19	7
1920–29	33
1930–39	12
1940–49	32
1950 to date	8
Total	92

Because of the depression years, this table shows that only 12 significant books are listed in this bibliography from 1930–39; this was only 36 per cent of the number for the previous ten-year period. One can deduct from these data that the development of industrial education as a profession parallels industrial expansion during prosperous years.

The current content books, those used by students in industrial classes, are estimated to number more than 3000. The John Trybom Memorial Library, maintained by Wayne University and the Detroit schools, as an inspection library for teachers and students in this metropolitan area, now houses more than 2000 of these current titles. The books in this library have been donated by 109 publishing companies, manufacturers, organizations, and societies, and are classified under these headings: aeronautics, air conditioning, arts and crafts, automotive, building trades, cosmetology, diesel engines, drafting, electricity, related English, furniture, home mechanics, guidance, related mathematics, metalworking, model building (aircraft and autos), patternmaking, photography, printing and graphic arts, refrigeration, safety, related science, tailoring, watchmaking, welding, and woodworking.

The educational departments of American industrial corporations are producing visuals, instructional manuals, and other literature for the schools. Most of this has been produced in the past 15 years in cooperation with industrial educators. Many corporations have now employed persons with professional preparation in industrial

[1] G. Harold Silvius and Estell H. Curry, *Teaching Successfully the Industrial Arts and Vocational Subjects* (Bloomington, Ill.: McKnight and McKnight, 1953), Appendix C.

education to give leadership to the development and distribution of these materials.

The Museums

After spending many years at the turn of the century in the development of industrial education, Charles R. Richards became director of the American Association of Museums. It was then that he prepared a manuscript for a book titled: "*Industrial Museums.*"[2] This book is a report of industrial museums and museums of industrial arts of that era. Because of his background in industrial education, Richards was able to interpret the importance of these museums as they have recorded the development of industrial technology. He pointed out that in primitive cultures village crafts were carried on in the open where the natives could observe the silver and copper being fashioned into useful articles, cloth being dipped in dye pots, and the work coming from the potter's wheel. In the West as industry was developed the progress of production was hidden behind factory walls. Youth and adults in the community knew little about the operations performed in these factories. Richards stated:

> The Industrial Museum in its highest development endeavors to accomplish this purpose by displaying materials that clearly and succinctly illustrate industrial processes in ways that may be readily understood by both young and old.[3]

Europe recorded its early industrial development in these institutions: Deutsches Museum in Munich, Technisches Museum in Vienna, Science Museum in London, Conservatoire des Arts et M'etiers in Paris, and the Palais Schwarzenburg in Prague called the Bohemian Technical Museum. The European museums stimulated American industry to record its mass-production developments. The Industrial Museum of the American Steel and Wire Company at Worcester, Mass., the Museum of the Bethlehem Steel Company and the Bethlehem Ship Building Corporation, exhibits of the New York Central Railroad and the Baltimore and Ohio Railroad, and the Edison Museum developed by Henry Ford at Greenfield Village in Dearborn, Mich., are examples of developments resulting from private enterprise. Our government, through the National Museum, maintained in connection with the Smithsonian Institute in Washington, D. C., has collections illustrating American developments in engineering and industry. The importance of these industrial museums is best expressed by this theme inscribed around the dome of the Museum of Science and Industry in Chicago: "Science discerns the laws of nature; industry applies them to the needs of man."

Schools have organized field trips to these museums. Special exhibits by trained custodians have encouraged increased numbers of adults to visit museums where American industrial development is recorded.

In Just Fifty Years

The industrial education pioneers set the stage for industrial arts as it now contributes to the general education of youth, and the school programs in trade education, which have become so essential in American education during the first half of the twentieth century. Industrial training programs are organized to augment what is offered by the public schools. The professional organizations for industrial educators are numerous, and focus attention on the importance of those who devote their life to this profession. The extent of the literature to describe the technological content for courses in industrial education is indeed voluminous, and the progress of industrial technology during the first half of this century has been recorded in this nation's industrial museums.

Fortunately the growth and development of industrial education is recorded in the 40 bound volumes of *Industrial Arts and Vocational Education* magazine that may be found in the reference rooms of leading libraries throughout the world. This has been accomplished by The Bruce Publishing Company as they have released this professional publication month by month over a 40-year period It now seems certain that the quality of this professional periodical and its acceptance by industrial educators makes its continued success in the years ahead assured. The profession salutes John J. Metz, the editor, on this milestone, the 40th anniversary of *Industrial Arts and Vocational Education*.

[2]Charles R. Richards, *Industrial Museums* (New York: The Macmillan Company, 1925).
[3]*Ibid.*, p. 1.

The Demonstration— Before, During, and After

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Tell — Show — Do — Check — The demonstrator *tells.* — The demonstrator *shows.* — The observer *does.* — The observer and demonstrator together *check. Tell, show, do,* and *check* represent four vital phases of the demonstration lesson as an aid in learning many "do" activities. There are some skills and insights that can be easily and efficiently transferred to the learner with a demonstration as the method of instruction. The demonstration is often used in conjunction with other methods of teaching. It is an appropriate way to learn many activities characteristic of an industrial-arts program. Any activity in which the learner imitates the demonstrator is the essence of the demonstration. Historically, imitation is an old recognized pattern of living. Demonstrations are generally used to clarify concepts, attitudes, skills, and processes.

Suggestions are in order to help teachers and pupils to increase the efficiency of the *tell, show, do,* and *check* process. Suggestions are listed under the following headings: (1) Before, (2) During, and (3) After. Under the first heading will be found the kind of information the teacher needs to know *before* the students are called together to observe the demonstration. Under the second will be found the type of information the teacher needs to apply *during* the performance. Under the third will be found the recommended activities of a demonstrator *after* the students have left the site of the demonstration.

Before Demonstrations

The teacher should:

1. Understand thoroughly the objectives of the demonstration.

2. Understand and be able to apply principles of learning.

3. Be able to analyze and comprehend learning problems of individuals.

4. Prepare and distribute study guides about operations.

5. Determine the *best* procedure for performing the operation for particular groups of observers.

6. Be aware of alternate method of performing an operation for different conditions.

7. Prepare, if necessary, notes for performing the operation to be demonstrated so as to insure thoroughness.

8. Be aware of his own peculiar abilities and limitations.

9. Be aware of student interests, attitudes, aptitudes, and progress levels.

10. Be conscious of students' point of view as to the need or use of the operation.

11. Gather all items needed during the demonstration and arrange them in an orderly manner.

12. Be certain of proper lighting and ventilation before starting the demonstration.

13. Provide atmosphere free of distractions — noise, sun glare, posters.

14. Be certain that the equipment is in proper condition for satisfactory operation.

15. Select appropriate materials upon which the operation may be performed.

16. Be conscious of safety features to be pointed out during the demonstration.

17. Prepare or select necessary learning aids.

18. Time the demonstration with prevailing learning activities.

19. Be aware of the time limitations for the operation to be performed.

20. Plan demonstrations for small groups of observers rather than for the entire class, if possible.

21. *Dry run* the demonstration — include all motions and speech.

During Demonstrations

The teacher should:

1. Encourage observers to arrange themselves for optimum hearing and observing.

2. Make objective of the demonstration known to the observers.

3. Point out the elements of the demonstration the observers are to look for.

4. Employ appropriate choice of words, phraseology, diction, tone, speed, etc.

5. Encourage students to ask questions pertaining to the demonstration.

6. Be conscious of appropriate posture and motions at all times.

7. Be enthusiastic and interested in giving the demonstration.

8. Make the demonstration interesting to listen to and watch.

9. Co-ordinate the *showing* and the *explaining* simultaneously.

10. Exercise as many human senses as possible.

11. Include only information pertinent to the operation.

12. Follow suggestions in the form of notes, if necessary.

13. Be certain to explain new terminology sufficiently.

14. Identify and describe the function of unfamiliar parts of equipment.

15. Supplement explanations with appropriate learning aids whenever possible.

16. Describe connections of the operation being presented with previous operations.

17. Make the demonstration as simple as possible.

18. Encourage students to perform the operation before other students to insure better learning.

19. Employ assistants, if advisable, to the greatest advantage.

20. Ask questions occasionally to test continuity of understanding.

21. Display materials upon which the operation was performed.

22. Review safety precautions and procedure of the operation.

23. Repeat operation without explanation — *silent demonstration.*

After Demonstrations

The teacher should:

1. Make arrangements to have the students try out the operation as soon as possible.

2. Return items used during demonstration to proper places.

3. Allow sufficient time interval before demonstrating another operation.

4. Analyze student responses which occurred during the demonstration.

5. Study the demonstration for possible weaknesses.

6. Offer praise to those performing the operation correctly.

7. Be alert for incorrect motions of students while performing the operation.

8. Analyze student difficulties in performing the operation properly.

9. Re-demonstrate to students having difficulties.

10. Review procedure of the operation.

11. Exhibit interest in the activities of the student.

12. Integrate operation with other processes.

13. Check students' work for accurate performance.

14. Suggest alternate methods of performing the operation for particular circumstances.

15. Ask questions occasionally about major points of the past demonstration — procedure, terminology, and principles.

16. Record student growth.

Craft Clubs

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The industrial-arts instructor is frequently called upon to sponsor a craft club. When faced by this problem, he starts to wonder, why have a club, what can be done, and when and where is the club to meet?

In a course at the Pennsylvania State College during the 1953 summer session, the following paper on craft clubs was developed by three industrial-arts instructors. It was developed with the thought in mind that there are many teachers that do not recognize the large number of activities that could be carried on by such a club.

Craftwork teaches the creative use of the student's hands for the expression of himself. A craft program provides a place where boys, girls, or adults may gather to create useful projects requiring primarily the development of manipulative skills.

Objectives

1. To provide the individual with a manipulative form of leisure-time expression.
2. To develop an appreciation of good design and workmanship.
3. To give the student an opportunity to experience the thrill and satisfaction that comes from a job well done.

Activities

Following is a list of major activities that might be included in a crafts program. The final selection of those to be used would depend upon the qualifications of the teacher, interest of the students, and facilities and materials available.

1. Archery
2. Basketry
3. Bookbinding
4. Ceramics
5. Chip carving
6. Etching
7. Fly tying
8. Jewelry
9. Horncraft
10. Knitting
11. Knots
12. Leathercraft
13. Lettering
14. Magic
15. Marionettes
16. Metalcraft
17. Models
18. Lapidary work
19. Needlework
20. Painting
21. Photography
22. Plastics
23. Blockprinting
24. Puzzles
25. Radio
26. Shellcraft
27. Silk-screen work
28. Stenciling
29. Toy making
30. Upholstery
31. Weaving
32. Whittling
33. Wood carving

Some of the following minor activities should be utilized in planning a yearly program to provide variety and maintain interest in the club.

1. Displays (school and local stores)
2. Open house
3. Parents night
4. Newspaper photos on club activities
5. Articles submitted to school publications and local newspapers
6. Radio programs on club activities
7. Project competition
8. Trips to craft or hobby shops
9. Assembly programs
10. Social events (picnics, hikes, trips, boat rides, swimming, parties, dances, etc.)

Organization

1. *Sponsor:* The sponsor could be any teacher with experience in craftwork or have some craft as a hobby.

2. *Place of meeting:* The best place is the shop. Any room could be used if it will accommodate the activities decided upon by the group or sponsor.

3. *Membership:* A maximum of 15 students is recommended at the start of any club. If a large number of students show interest it is best to form two or three clubs.

4. *Number of meetings:* As often as the schedule permits. At least once a week.

5. *Financing:* Students should be required to pay for all materials used. If a local hobby shop is available, students should supply their own materials. Awards for competition may be purchased from club dues or donated by merchants, sponsoring individuals, or community service organizations.

6. *Internal organization of club: Sponsor:* A student elected faculty adviser. *Student leader:* A student elected by members of the club as the leader. *Secretary-treasurer:* To handle all dues and purchase supplies for members as they are needed. *Activity leaders:* Students with a knowledge of each craft to help those beginning and to lighten the load of the sponsor.

7. *Points to consider in starting a club:* (1) Limit number of activities to three or four at start. (2) Keep first projects simple but useful. (3) Cost of projects should be determined before they are undertaken. (4) Materials should be paid for in advance. (5) Elect leaders and hold a special meeting with them to outline year's program. (6) Hold monthly leaders' meetings to evaluate club's progress. (7) Consider ending club activities during April to allow time for the completion of projects under way and loss of interest due to outdoor activities.

Extrinsic Values

Awards of various types may be used to promote interest in the club, its activities, and individual contributions to the club. A system of progressive activity ratings for club members may be used to afford them tangible evidence of advancing merit and encourages them to improve their skills and knowledge.

References

Below are references which will be of help to any sponsor in the organization of a craft program.

Hill, J. A., "Arousing and Maintaining Interest in Crafts," *School El. ed.*, XXXII (Jan., 1944), 430–431.

Liotta, F. V., "Creative Laboratory or Handicraft Shop," Industrial Arts and Vocational Education, XXVI (Mar., 1941), 106–112.

Longley, R. L., "Wartime Metalcraft Club," Industrial Arts and Vocational Education, XXXVI (Mar., 1945), 66A.

Whitney, V., "Crafts in the Recreational Program," *Recreation*, XLVI (Apr., 1952), 26–28.

Projects from beginning general shop, Stayton Union High School, Stayton, Ore. Instructor, Arthur C. Corbett

INDUSTRIAL ARTS and VOCATIONAL EDUCATION

JOHN J. METZ, Editor

OUR FORTIETH ANNIVERSARY

Year after year has elapsed since the *Industrial Arts Magazine* was started, and now it is forty years old, although in the meantime its name has been changed to INDUSTRIAL ARTS AND VOCATIONAL EDUCATION.

It may be well to go back to the first issue, printed in January, 1914, to see what the editors who were then at the helm of the magazine, William C. Bruce, managing editor, and Samuel J. Vaughn, E. J. Lake, and Wilson H. Henderson, were envisioning as the task which the new publication was to perform.

The introduction on the first page of that January, 1914, issue reads as follows: "The *Industrial Arts Magazine* shall stand for the united arts, reaching out in manifold ways to accomplish one great aim. This aim embraces not alone the preparation for financial returns from industrial work, but also the preparation which the duties of efficient citizenship demand. This publication shall recognize some distinction, but certainly no conflict between manual training and vocational education."

The editors also stated just what they thought their magazine was to offer its readers. "In each issue of the magazine, we hope not only to reach the leaders, but to present something which can be appreciated by the newcomers and which will be of greatest advantage to the average teacher. The expert who is far in avance of the procession, must bear patiently some of the more elementary discussions, and the newcomer must adjust himself to the idea of learning more than the mere elementary material."

These editors, even at that time, found it necessary to plead that the teachers of vocational education, art, manual training, domestic science and household art work harmoniously together because they all are fundamentally concerned with the same great problem which concerns all education — the conservation and enrichment of human life.

Even a cursory glance through the volumes from Volume 1 to the present Volume 43 will prove how well publishers and editors have hewed to the line established forty years ago. They have always tried to keep in mind that the magazine was to be of help to all interested in the field of industrial arts and vocational education. For this reason we are glad that we have made thousands of close friends during the past forty years who not only remained with us as interested readers, but as thoughtful contributors besides.

Throughout the years the publishers have always remembered that if the magazine was successful it was because their many professional friends had helped them make it so by the material that was published in the pages of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. The magazine also feels that advertisers deserve a great deal of recognition because they have been of great assistance throughout the years in furnishing education with the things that make possible for the schools to offer the youth of America the opportunities which the wide range of industrial arts and vocational education require and deserve.

In this issue, then, INDUSTRIAL ARTS AND VOCATIONAL EDUCATION wants to say *thank you* to everyone who has helped make education more meaningful to the thousands of youngsters who now take shopwork in our schools, to our vast army of readers, to the authors, and to the manufacturers and dealers who help in this great field of modern education.

INDUSTRIAL ARTS AND VOCATIONAL EDUCATION also wants to say a special *thank you* to those who have written a special article for this fortieth anniversary number. The publisher and the editor want to express to Tom Hippaka, William F. Rasche, Ralph E. Pickett, S. L. Coover, Homer J. Smith, Roy G. Fales, and G. Harold Silvius their deep appreciation for the kind sentiments expressed in the articles written by them for our magazine that is starting its fortieth year of service to industrial arts and vocational education.

FOR THE YEAR 1954

Customarily, as we approach the new year, we think of making at least some new resolution for the year that is just about to start.

The businessman usually takes an inventory at this time of the year — and the shop teacher may well follow his example. Of course, the businessman inventories physical things while the teacher has to make an inventory of more or less intangible things.

He has taught a class of students since school opened in September. What has he accomplished with them since that time? Has he more friends in that group than he had at the end of September? Is he satisfied with the progress they have made so far? Does he notice any behavior changes for the better since they entered his shop? There are many other questions pertaining to teacher-student relationships that he might set up for himself.

Then there are the shop conditions that he might scrutinize. These embrace the material things that approximate those that the businessman must inventory. Again a set of questions can be set up that may be helpful.

Does the shop and equipment look clean and inviting or must a program of better housekeeping be instituted? How is your material supply? Will you have enough to last to the end of this semester? Have you thought of brightening up your classroom with a new coat of paint? Some of the newer wall paints now available are easy to apply and some of your students may be eager to help you.

Then there are other things that you can inventory. Does your course of studies need revamping? Have you a good set of test questions, or ought you write some more? Can you make a few more teaching aids that will make it easier for you and your students?

The writer just begins to realize that he should stop extending his list of questions and suggestions; otherwise, he may find that he has lost friends that he may have had when school opened in September.

Season's Greetings to All!

Leaders in Industrial Education

WILLIAM T. BAWDEN

Emeritus Professor
Kansas State Teachers College
Pittsburg, Kans.

DAVID SAMUEL SNEDDEN

(Continued from page 338 of the December, 1953, issue)

Practical Arts

Dr. Snedden used the term, "practical arts," to refer to one of the new divisions of elementary and secondary schools which began to come into prominence in the early years of this century. "These embraced such subjects as manual training, shopwork, simple agricultural arts for boys, as well as food preparation and needlework arts for girls." In discussing this field of effort, Dr. Snedden objected because "the public generally and not a few educators believed that courses in the practical arts would also lay foundations for later vocational competencies." His own beliefs with reference to these matters he summarized as follows:

1. The progress of American industrial production has been such in specialization, equipment, and mass operations, "as to render impracticable, as preparation for it, any amount of *practical arts* performances in junior and senior high schools of general education. . . . No considerable amount of true vocational education is practicable for youths under full 18 years of age."

2. For boys of 12 to 18 years of age, and girls if they wish, there are ample justifications for varied and rich shop courses with woods, metals, cements, electricity, leather, textiles, and the like, "*not* for prospective vocational purposes, but as contributions to cultural experiences now seldom available in homes."

3. Because the household practices of women in homes, and of agricultural practices by men on farms, are still far more simple and unspecialized than the processes of industrial production, "it is still practicable to offer courses in household arts to girls, and tillage and stock-raising arts to boys, especially at ages of 14 to 18 years, which can have some genuine vocational values."

His Position Explained

On July 1, 1916, Dr. Snedden terminated his services as State Commissioner of Education in Massachusetts, in order to accept reappointment to the faculty at Teachers College. At a farewell dinner tendered by the State Board of Education, Dr. Snedden responded to the addresses of felicitation by endeavoring to "explain why in some respects he had incurred the reputation of a radical and a reformer, and in some others that of a conservative." He said that in his own estimation he was an experimental radical in his thinking and writing, but that, in promoting policies where funds were to be expended and children concerned other than his own, he could act only conservatively.

He explained further that, "whereas in dealing with practical policies directly affecting the funds of others he deemed it unjustified to be experimental, he considered the situation quite different when, in his capacity as thinker, writer, and speaker, "his readers and hearers were fully competent to assimilate his intellectual explorations, (and) he felt it incumbent in his position to explore as many avenues as possible. Hence, at all stages beyond his first years as a rural school teacher he has been an advocate and promoter of a considerable quiver of supposed changes, and especially of reforms, in American public education."

Return to Teachers College

In the summer of 1916, Dr. Snedden returned to Teachers College, New York, with an appointment as professor of educational sociology and vocational education, in recognition of "his known and specialized interests." Here he remained for 20 years, until his retirement on July 1, 1935. He recorded that "this was in many ways the most satisfying period of his life. He had just the kind of teaching subjects that appealed to him. In the College and in the lecture field his listeners by hundreds seemed no less interested in those subjects than he himself, although for listeners as well as speaker the times were not ripe to take constructive action along the lines discussed."

During this period he regarded himself as a sort of "frontier explorer" in two departments of education of great promise for the future. "Vocational education and, more inclusively, educational sociology, of which vocational education is one branch, were together to constitute one great division of the educational sciences."

For the next 20 years Dr. Snedden's "major activities" included his classroom teaching at Teachers College, fairly frequent lectures and short courses in various parts of the country during those periods when Teachers College was not in session, and a journey around the world during his sabbatical leave of one half year.

Added to these were what he described as "exploratory activities," which included thinking and writing on such subjects as: the need and practicability of universal and democratic *vocational education;* conditions and practicability of far better *civic education* than was yet available; the validation of *practical arts* education, especially for children of from 10 to 15 years of age; the foundations of better *moral education*, in recognition of

societies intermediate between family societies and large political societies; interpretation of *cultural education* in terms of modern intellectual and aesthetic riches and recognition of the widely varying cultural interests of children and youth; examination of the practicabilities of *family membership* education at ages 16 to 18 years; and finally the culmination of these strands in terms of *careers* or *roles* as universal groupings of objectives, aiming eventually toward true *sciences* of *values* of learning.

Teaching Methods

What Dr. Snedden has to say of the teaching methods used in his graduate courses at Teachers College is of special interest to other teachers. It should be noted that most of his students were mature, experienced educators. They included superintendents of schools, principals, presidents of colleges and teachers colleges, and exceptionally able teachers, who were seeking master's or doctor's degrees, in preparation for more responsible positions. The sizes of classes ranged from 50 to 100 in the regular semesters, and from 75 to 200 in summer terms.

It was his custom to require each student, at each meeting of the class, to hand in a written statement of what he or she regarded as a problem or query growing out of his experience, and pertinent to the subject matter of the course, as outlined in the mimeographed digest furnished by the instructor. Furthermore, the student was expected to add to his statement of the problem or question his own present tentative findings on it.

With these papers before him, either then or at a later session of the class, Dr. Snedden undertook to analyze and expound his own interpretation of the issues. The course usually consisted of thirty sessions of two hours each. In the first few days, "some of the students were rather vague as what is meant by a *problem*. But presently most of them became keen in pursuit of the debatable issues arising in what the instructor regarded as the novel outlooks of the course."

Toward the close of the course the papers contributed by each student were assembled under his name and carefully gone over as a whole. As announced at the beginning of the course, no final examination was required. "But each assembled mass of 25 or more contributions of each student gave what the instructor regarded as an entirely adequate and fair exhibit of not only his capacities but also his performance on the essentials of the course. On that exhibit he was graded."

An Evolving Philosophy

It was during these two decades of his second teaching assignment at Teachers College, 1916–35, that Dr. Snedden made his greatest contribution to the development of a philosophy of vocational education, if it may be properly so called. A prolific writer, he produced more than 20 books during this period, an almost incredible average of more than one book each year. As indicated elsewhere, he himself did not believe that a satisfactory philosophy of vocational education had been worked out, and he doubted whether that consummation would be attained in the foreseeable future.

As he visualized it, a few years earlier, the goal is the provision for every American boy and girl, by the time they reach the age of self-direction and self-support, of a richer and more useful educational equipment for the facing of life's duties and opportunities. None of the proposals or programs then in vogue gave promise of achieving this goal, the main reason being that the school was completely lacking in background, experience, and outlook necessary for comprehending the nature of the problems involved, to say nothing of solving them. "The shifting of vocational education from the field of industry to the school is the crucial problem of our school organization."[3] The schoolmaster is confronted with the task of dealing with a problem alien to his experience and contrary to his traditions. Our schools have always been predominantly cultural in their aims, but the new vocational education must be practical. "A thousand difficult questions are raised that school tradition cannot answer."

Special Problems

Toward the close of this book, Dr. Snedden distinguished a number of problems, the solutions for which were not then in sight, and for which further careful study and research were regarded as imperative:

1. The practical work of the vocational school should conform approximately to the prevailing conditions of the occupations. For industrial education this involves recognition of the problems of production.

2. Vocational education will have to be varied in kind, in degree, and in aim, according to the variety of callings for which preparation is to be given.

3. Satisfactory treatment of the related technical studies demands textbooks and other teaching aids which are lacking at the present time (1910).

4. In developing programs of vocational education care must be exercised that market conditions be not unduly or unnecessarily disturbed.

5. Experience has already demonstrated that vocational education will prove to be expensive — far beyond the costs of traditional, liberal education. These expenditures must be looked at from the social point of view, and as a form of social investment.

6. It is fully obvious that the problem of supplying teachers for vocational schools will be a difficult one. It seems to be generally agreed that the successful teacher in a vocational field must be primarily equipped as a practical workman. To this equipment it is highly desirable that he should add as much pedagogical ability and general culture as possible.

Much confusion of thought existed in that day, as now, as to the relation between vocational education and cultural or liberal education. Any discussion of this subject must recognize the fact that "liberal education has to do with preparing the individual to appreciate, on a broad scale, the world in which he lives. For most individuals, these studies have little or nothing to do with vocational efficiency." Liberal and vocational education are not identical, and have only certain elements in common. They aim in essentially different directions, and their valid aims can be realized only by making allowances for these differences.

In conclusion, Dr. Snedden pointed out that the demand for vocational education under school conditions is a widespread one,

[3]Snedden, *The Problems of Vocational Education* (Boston: Houghton Mifflin Co., 1910), p. v.

and that it is rooted in the social and economic changes of the age. Rightly organized and administered, vocational education will prove a profitable investment for society. The pedagogy of vocational education differs widely from that evolved for liberal education, and especially in respect to the necessity for making practice, or participation in productive work, a fundamental element.

Further, vocational education should be so organized and conducted as to contribute to the making of the citizen, as well as the worker. "Vocational education is not in conflict with liberal education," but is a supplemental form, and may be expected to reinforce it.

Secondary Education

Dr. Snedden's approach to vocational education from the point of view of the sociologist caused him to consider a number of related problems which, he insisted, must receive attention. "The time has arrived when we must study the objectives of secondary education as never before."[4] He discussed certain immediate objectives, such as "passing the subject," "getting ready for college," and others, as well as more remote objectives, such as "character building," "mental training," and the like, and declared that for these we must substitute "other objectives of a more positive and scientific character, based on demonstrably valuable ends, probably to be achieved for the individual and for society through the processes of secondary education."

He argued that vocational education does not and cannot consist simply of modifications of the historic types of education. It is in reality a new and distinct type, superadded to those existing hitherto, and for the purposes of meeting new social needs.[5]

Since the world has always had vocational education, in some form or other, "the new demand is in reality a demand for new agencies through which this indispensable form of education can be organized and made effective."

Dr. Snedden rejected the view, more or less widely held in that day, that the manual training high school was giving general preparation for industrial work, through teaching the principles of tool manipulation and of work with materials, as well as by giving some knowledge of related technical processes. "I have never been able to satisfy myself that this theory or tradition is anything more than a modification of the ancient notion that any good general education constitutes, through its effects in mental training and increase in general knowledge, a satisfactory foundation for almost any vocation. . . . I have no confidence in the notion that a more or less complete line of practical experiences in one of the trades (represented in the manual training high school) constitutes a satisfactory basis for entrance upon another."[6]

With reference to the place of manual training in the secondary school, he strongly endorsed the idea of a general course of instruction, rich in manual training experiences, for boys from 14 to 16 years of age. "I do not at present believe that it is profitable to continue this type of manual work, intended as a part of general or liberal education, beyond the age of 16 years. If manual work is to be done thereafter, it should be on a more definitely practical, that is, vocational, basis."

[4]Snedden, *Problems of Secondary Education* (Boston: Houghton Mifflin Co., 1917).

[5]*Ibid.*, p. 55.

[6]*Ibid.*, pp. 101-103.

(To be continued)

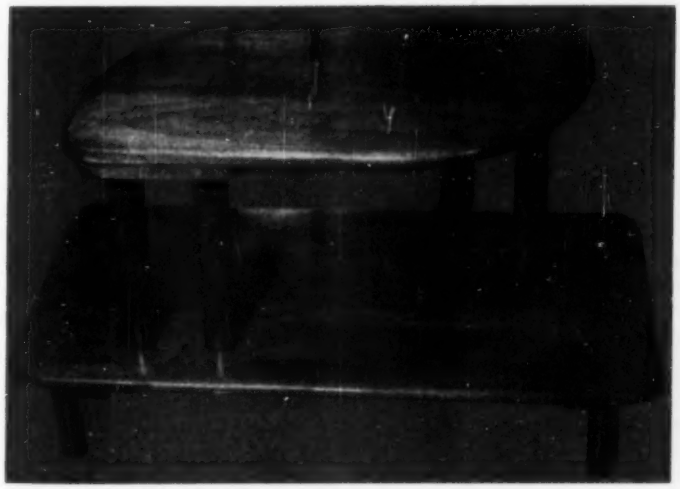
PROBLEMS AND PROJECTS

WALNUT COFFEE TABLE

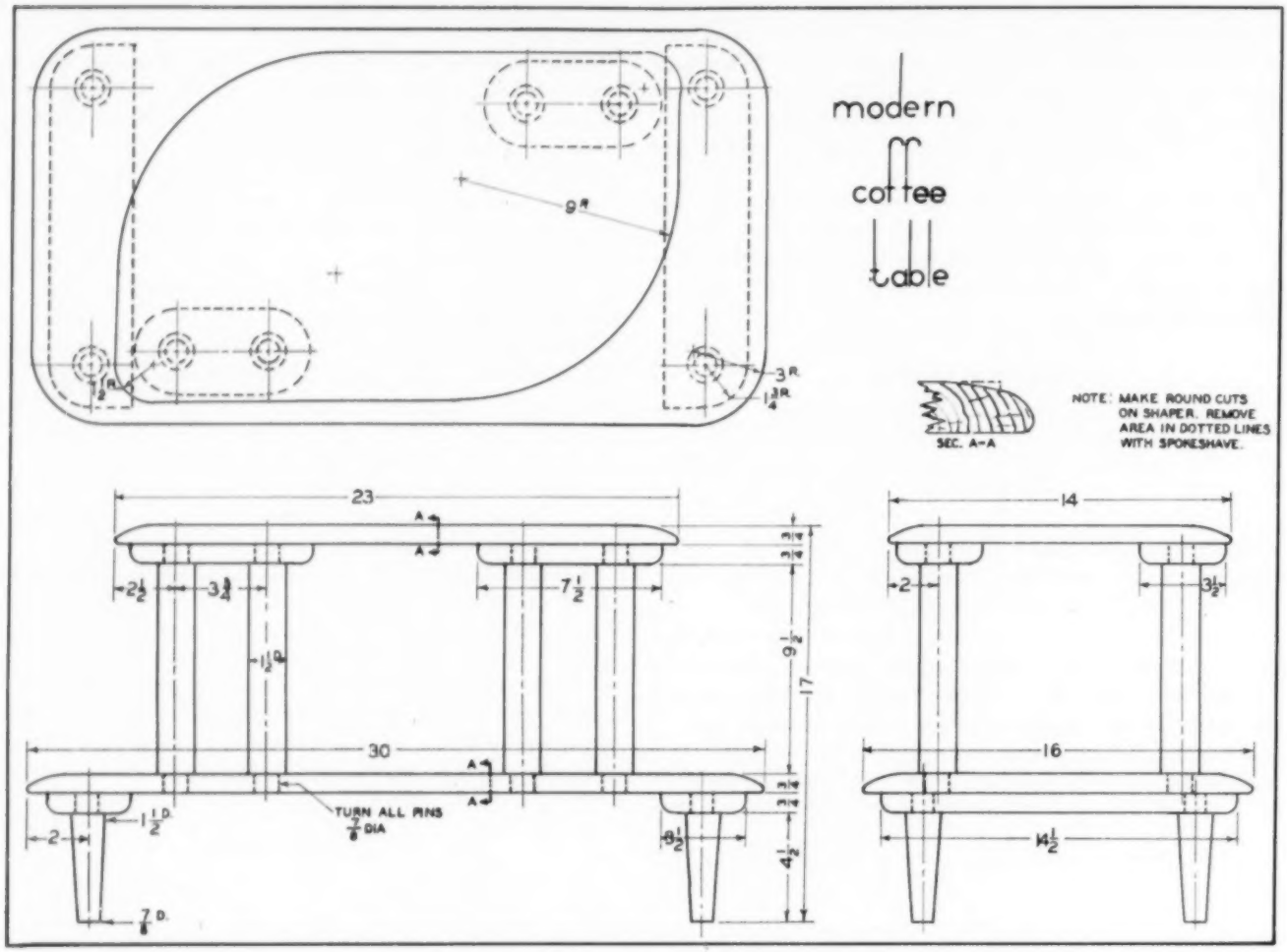
EDWIN D. GROVES
American Embassy, TCA
Rangoon, Burma
Formerly at High School
Winfield, Kans.

The modern coffee table described herewith won the Ford Motor Company Outstanding Achievement Award in woodworking for Grant Dick, seventh-grade student in Winfield Jr.-Sr. High School, Winfield, Kans.

As wide, thin boards tend to warp, it is best to save gluing and squaring of the top and shelf until most of the other work on the job is done. Make the two leg cleats and shelf cleats and bore the holes as indicated in the drawing. The edges and ends of these may be shaped or chamfered or rounded with a



Walnut coffee table by Edwin D. Groves



Details of the modern coffee table

hand plane. The holes should be bored as straight as possible. Turn the feet and posts to size and shape and turn the end pins carefully to fit the holes in the cleats. Saw kerfs may be sawed in these pins and wedges fitted later, if the pins do not fit well.

Make the top and shelf to dimensions shown. After edges have been smoothed, shape as indicated, using two shaper cutters of different radii. Then smooth to an even tapering curve with a spokeshave. If a shaper is not available, the entire edge may be shaped with a spokeshave by first making a template and then cutting to this form. An excellent appearance may also be had by making the edges square and smooth and leaving them so.

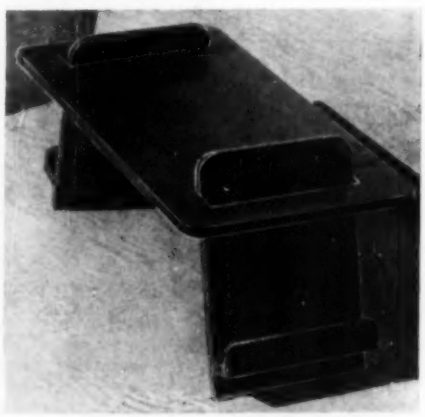
Bore four holes as indicated in the shelf. A good way to locate these is to clamp the post cleats in place and mark, or even bore through the existing holes. Glue the legs to the leg cleats, clamping them until the glue sets. Screw the cleats to the bottom, using five countersunk flathead screws through from the bottom of each cleat. Glue and clamp the posts in place, being sure they are square to shelf and not in wind. Screw the top to the post cleats, using three screws, each.

The contest piece was made of walnut and given a natural finish of filler and lacquer. The piece could be made of yellow poplar with white enamel rubbed into the wood, and then wiped off. This should be followed by white shellac and clear varnish, lacquer, or more coats of shellac. An attractive finish for modern oak furniture is called "oriental oak." This is made by first spraying the wood with black lacquer. Brushing is usually not desirable. The black is followed by lacquer sealer. White filler (not neutral colored) or white enamel is then rubbed into the grain and wiped off in the usual manner of applying filler. This is followed with water-white lacquer or varnish.

COFFEE-TABLE MAGAZINE RACK

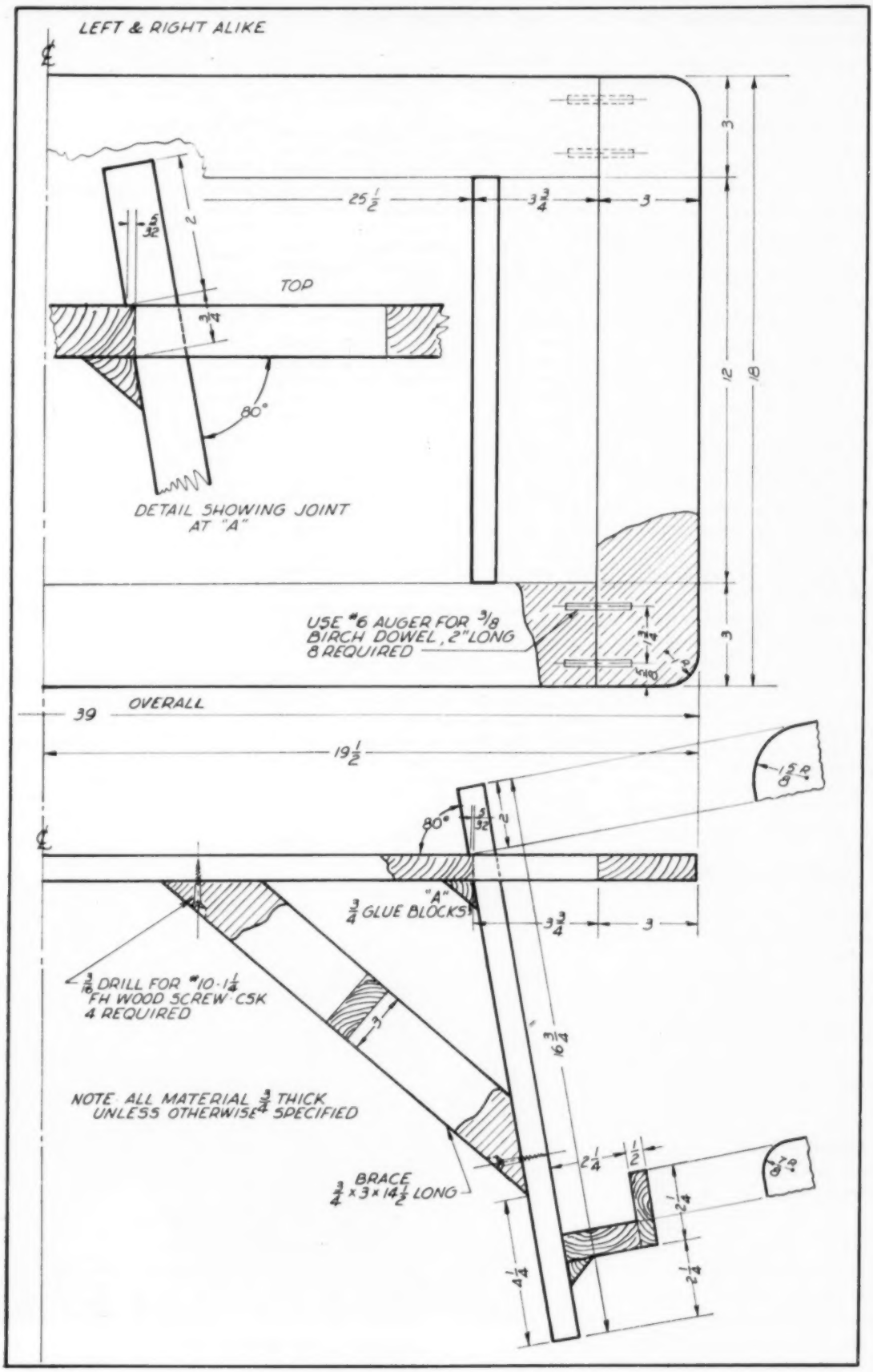
HUGH A. BAIRD
Newport Beach, Calif.

The combination coffee table and magazine rack shown in the above picture is designed to meet the present mode and has proved very popular with our second semester students in cabinetmaking. The table looks easy but proves to be quite a challenge to the average student.



Coffee-table magazine rack

Careful selection of material is paramount so when finishing time arrives it can be completed without staining, using the system



Details of coffee-table magazine rack

of natural color and clear lacquer. The joinery calls for special care.

The tools necessary are both power and hand — including circular saw, jointer, boring machine, and belt sander, if they are available; if not, the hand tools include jack plane, brace, and ⅜-in. bit, crosscut saw, and in both cases a 2-ft. square, drill stock, drill, screw driver, and a ¾-in. chisel.

Materials: Mahogany or ash is very suitable, or a combination of the two is quite desirable.

Procedure: See drawing. Select stock for top, two pieces 1⅜₁₆ by 6 by 25½ in., dowel same together, making the center of the top. Select side pieces for top 1⅜₁₆ by 3 by 33 in. These pieces are doweled so the outside of the top stands 3¾ in. beyond the ends. Select end pieces for top 1⅜₁₆ by 3 by 18 in. and dowel to the ends of the top. This gives an opening on both ends 3¾ by 12 in.

The ends of the magazine rack are made next. Select four pieces 1⅜₁₆ by 6 by 16¾ in., glue up two pieces making two ends 12 by 16¾ in., using the usual dowel joint. These pieces are grooved where they are fastened to the top as shown in the detailed illustration, and glued in place.

The magazine rack is next made as shown. Select two pieces 1⅜₁₆ by 2¼ by 12 in., for bases and two pieces ½ by 2¼ by 12 in. for the front. These are glued together into a trough and then glued to the magazine rack back and reinforced with glue blocks. The braces are made next and fitted to the top and back, glued and screwed into place. This completes the assembly as all pieces were planed and sanded before assembling. Clean off all excess glue and do the final sanding before finishing.

Finish recommended for this type of table is simple: One coat of boiled linseed oil rubbed on and wiped very dry to bring out all the character of the wood. Allow 36 hours for drying, then rub hard with a dry cloth. Then apply one coat of white shellac thinned to about 50 per cent and allow it to dry for six hours. Steel wool lightly and dust carefully. Then spray on a good clear lacquer if a spray gun is available. Otherwise, a good rubbing varnish may be used and brushed on. In either case, give plenty of time to dry before the second coat, and then polish with some good rubbing compound.

The cost is determined by the material used, but should not run over four or five dollars.

In the first three months of 1953, American railroads installed 574 new locomotive units, of which all but five were driven by diesel fuel oil. — *Petroleum Newsnotes.*

THE FLYTIER'S VISE

L. W. DRAEGER
Senior High School
Fond du Lac, Wis.

One of the fastest growing hobbies in the field of sports today is that of tying flies for the fisherman. You will recognize two fundamental reasons for this fact when some thought has been given to this most fascinating subject.

First, it offers a medium through which to study the interesting species of aquatic life upon which fish feed.

Second, it offers a thrill to the sportsman to catch fish on the flies he has tied.

Anyone who likes to fish has only to make a fly, and then catch a fish on it, to become an interested flytier. For those trout fishermen who think about fishing all winter, it offers an outlet for their enthusiasm preparing flies for the coming season.

The following plan for the flytier's vise gives the student an opportunity to make a piece of equipment which is the most important part of any flytier's kit. It can be made in several ways, depending upon the machines available in the school shops. The base, as shown here, can be eliminated and a clamp arrangement employed instead. If your school shop lathes carry large chucks, a chucking procedure can be worked out to form the base. However, to turn it on a mandrel offers a wider scope of machine operations.

To follow through with this project it is a good idea to offer your students a source of materials and information concerning the art of tying flies. Therefore, the names and addresses of companies whose catalogs will be informational and helpful have been added.

I have also given the titles of two books which will be a great help in offering instruction in the tying procedures of the various types of flies. Companies and their catalogs:

Fly Tying Supplies
Culver Lures Co.
1847 South 14th Street
St. Louis, Mo.

Fly Tying Materials
Tack-Tyers
Evanston, Ill.

Herter's Fly Tying Materials
Herters
Waseca, Minn.

Supreme Lures
Supreme M.F.G. Co.
P. O. Box 1789
Amarillo, Texas

Snoozing Sam Materials
Dodson Mfg. Co.
1833 N. Hoyne Ave.
Chicago, Ill.

Gregg's Fly Tying Materials
Gregg's Artificial Flies, Inc.
Bristol, Conn.

Fly Tying Materials
M. J. Hofmann Co.
989 Gates Ave.
Brooklyn, N. Y.

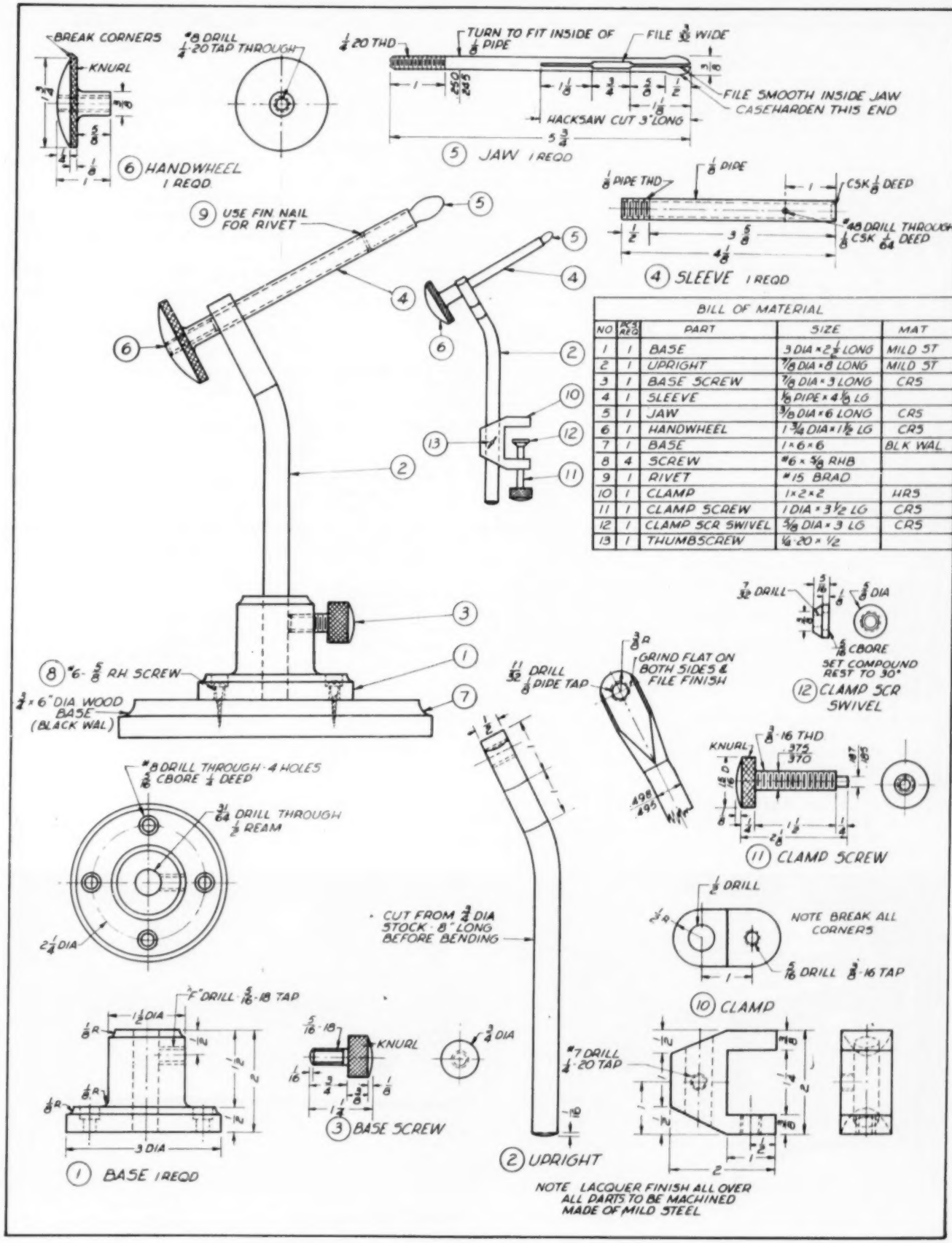
Instruction books which will be instructive in tying procedures: *How to Tie Flies*, Gregg, $1. *Professional Fly Tying and Tackle Making Manual*, Geo. Herter. Order from Herters, Waseca, Minn., $1.50.

Procedure in Making the Flytier's Vise

I. The Metal Base

1. Select a piece of mild steel stock 3 in. in diameter and cut it 2⅛ in. long.
2. Locate the center of the hole to be drilled for receiving mandrel.
3. Drill 31/64 dia. hole and ream ½ dia.
4. Press in ½ in. mandrel and mount

The flytier's vise



BILL OF MATERIAL

NO	REQ'D	PART	SIZE	MAT
1	1	BASE	3 DIA × 2½ LONG	MILD ST
2	1	UPRIGHT	⅞ DIA × 8 LONG	MILD ST
3	1	BASE SCREW	⅞ DIA × 3 LONG	CRS
4	1	SLEEVE	⅛ PIPE × 4⅛ LG	
5	1	JAW	⅜ DIA × 6 LONG	CRS
6	1	HANDWHEEL	1¾ DIA × 1½ LG	CRS
7	1	BASE	1 × 6 × 6	BLK WAL
8	4	SCREW	#6 × ⅝ RHB	
9	1	RIVET	#15 BRAD	
10	1	CLAMP	1 × 2 × 2	HRS
11	1	CLAMP SCREW	1 DIA × 3½ LG	CRS
12	1	CLAMP SCR SWIVEL	⅜ DIA × 3 LG	CRS
13	1	THUMBSCREW	¼-20 × ½	

Detailed drawing of the flytier's vise by LeRoy W. Draeger

on the lathe with a lathe dog.
5. Turn to shape as shown in the blueprint.
6. Locate center of hole to be tapped for the base screw and center punch; drill and tap.
7. Finish file, polish with abrasive cloth and finish with lacquer. (Remove stock from the lathe.)
8. Locate and drill holes for screws; then counterbore.

II. The Upright
1. Cut a piece of cold rolled stock ⅞ dia. by 9½ in.
2. Center drill and mount on the lathe with a lathe dog.
3. Turn to shape as shown.
4. File finish and polish with abrasive cloth.
5. Remove stock from the lathe and cut off the ends.
6. Place in chuck and turn to shape at the large end.
7. Reverse in chuck and face.
8. Grind flats and file finish.
9. Locate center of hole to be drilled and tapped.
10. Drill pilot hole.
11. Tap with ⅛ pipe tap.
12. Bend by putting the large end in a vise and placing a piece of pipe over the end for leverage.

III. The Base Screw
1. Cut a piece of cold rolled stock ⅞ dia. by 3 in.
2. Center drill and mount on the lathe with a lathe dog.
3. Cut to ¾ dia. and knurl about 1½ in. of the surface.
4. Cut to shape. Refer to the details for dimensions.
5. Cut off small end and thread.
6. Place in chuck and turn end of thumbscrew and polish with abrasive cloth.

IV. The Sleeve
1. Cut a piece of ⅛ pipe 4⅛ in. long.
2. Thread one end for a distance of ⅜ in.
3. Countersink the other end and round off the inside edge with a round file.
4. Locate and drill the No. 48-in. hole.
5. Polish with abrasive cloth.

V. The Jaw
1. Cut a piece of ⅜ dia. mild steel 5¾ in. long.
2. Center drill and mount on the lathe, using a small lathe dog.
3. Cut to shape as indicated. The small end must fit inside the sleeve.
4. Remove stock from the lathe and place in vise. Make a hack-saw cut 3 in. long, from the large end.
5. File inside the jaws and enlarge the part which will receive the rivet.
6. Thread the other end ¼–20 about 1 in. back.
7. Caseharden.

VI. The Hand Wheel
1. Select a piece of 2 in. dia. cold rolled steel and cut it 1½ in. long.
2. Place stock in lathe chuck and face.
3. Drill pilot hole with No. 8 drill on lathe.
4. Knurl, medium size.
5. Reverse stock in chuck and cut down to ⅞-in. dia. by ⅝ in. long.
6. Reverse the stock in the chuck again and form the end.
7. Drill No. 7 pilot hole on the lathe.
8. Remove the stock from the lathe and tap ¼–20.
9. Place in lathe chuck and polish with abrasive cloth and oil.

VII. Turning the Wood Base
1. Screw the metal base to a piece of ¾ black walnut 6 in. in dia.
2. Place metal part in a lathe chuck and turn the wood base to shape.
3. Sand smooth and finish with wax, then polish.
4. Remove from the lathe and unscrew the metal base from the wood.
5. Screw the metal base on the finished side of the wood base.

VIII. Assemble the parts as shown.

WELDED ALL-STEEL SOLDERING BENCH

FORREST KNOSS
Metal Shop Instructor
High School
Faribault, Minn.

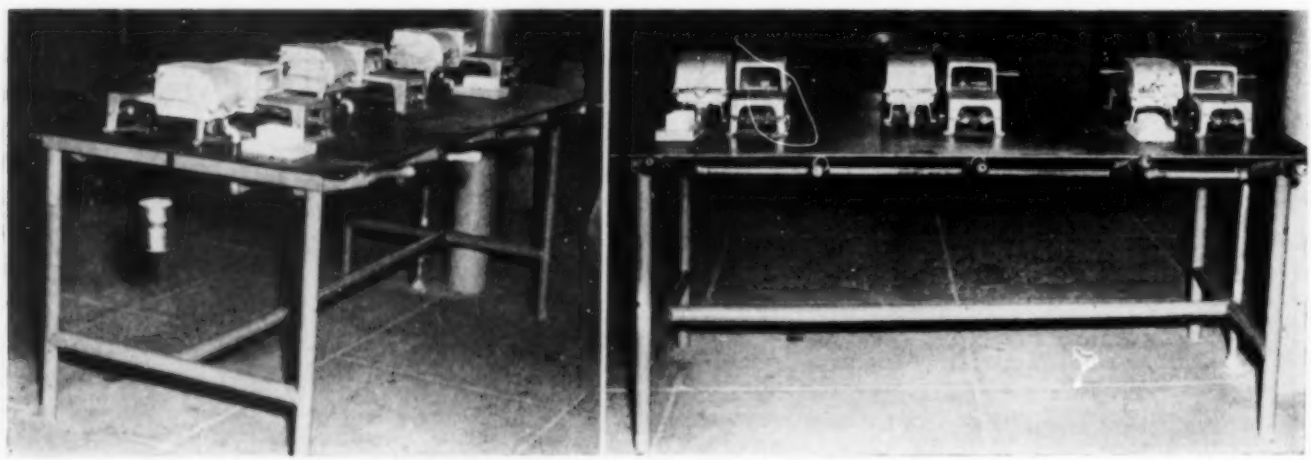
Comfortable working space for at least six boys, compact arrangement of furnaces, convenient safe holders for hot or cold soldering coppers, and a top to which solder does not stick, are the chief advantages of the relatively cheap and easily made soldering bench illustrated herewith.

Our metal shop had been struggling along for many years with a makeshift soldering bench consisting of a small wood bench with three furnaces crowded on it and placed against a wall. Needless to say, this resulted in a very congested area that was far from satisfactory or safe.

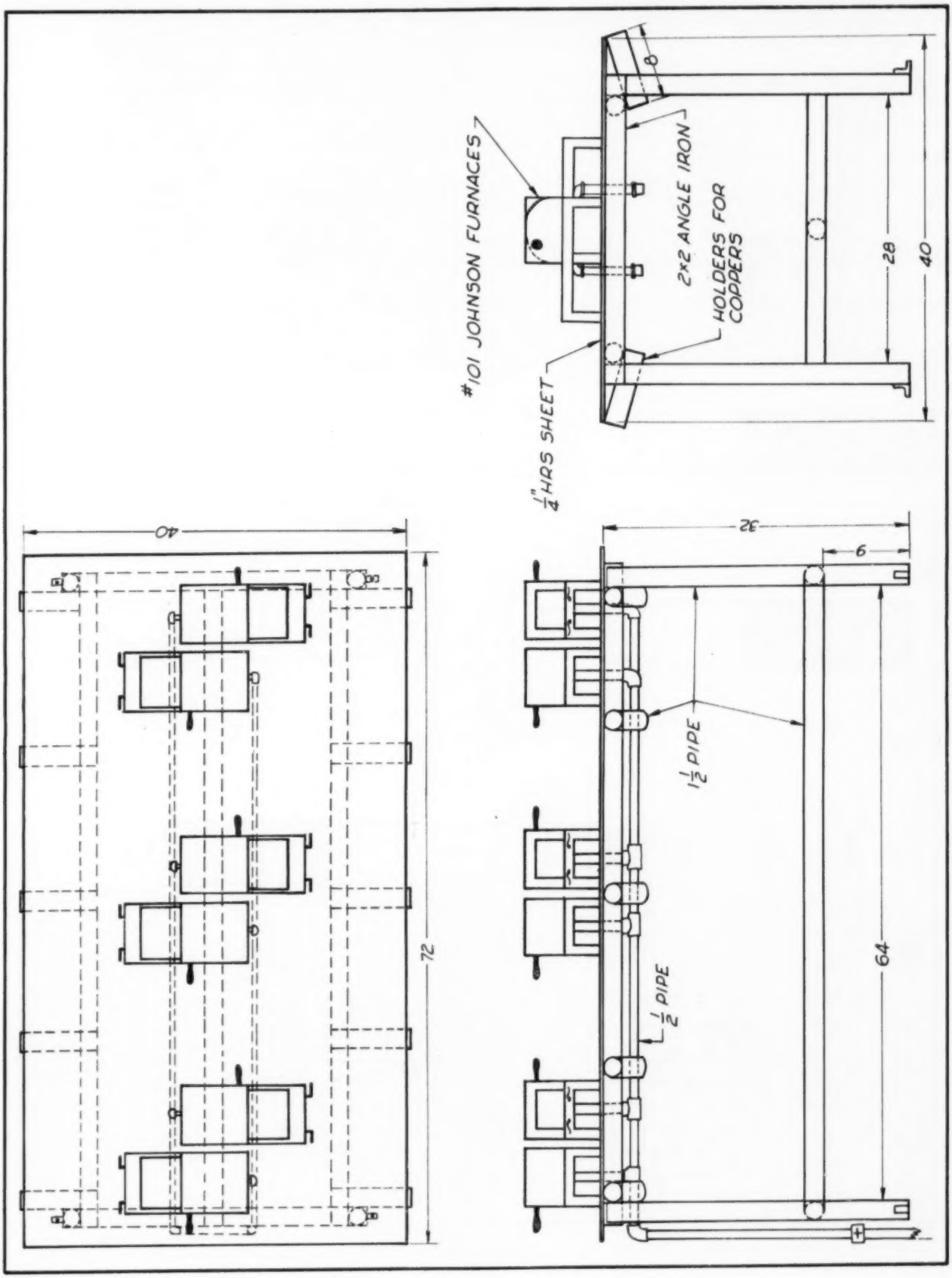
This past year our metal trades class made the welded all-steel soldering bench described herein, which seems to fill our needs very

BILL OF MATERIAL

Quantity	*Name*	*Material*	*Size*
4	Legs	Black iron pipe	1½ x 32 in.
3	Longitudinal braces	Black iron pipe	1½ x 64 in.
2	Cross braces	Black iron pipe	1½ x 28 in.
2	Top cross braces	Angle iron	¼ x 2 x 2 x 32 in.
10	Copper holders	Black iron pipe	1½ x 8 in.
1	Gas pipe	Black iron pipe	½ in.
4	Floor lugs	Angle iron	1½ in.
1	Gas shut-off valve		
28	Stove bolts		¼ x ½ in.
1	Top		¼ x 40 x 72 in.
6	Gas furnaces		No. 101 Johnson



Two views of the welded all-steel soldering bench



Detailed drawing of the welded all-steel soldering bench

satisfactorily. The class did all of the cutting, welding, plumbing, and assembling of the complete job including fastening to the concrete floor.

We used 1½-in. pipe because several used pieces happened to be available. In fact, with the exception of the top, all of the pieces consist of salvaged material.

Now after almost a year's use the good features of this bench seem to be the easy accessibility from both sides, the convenient storage places for the coppers, the maximum use of the work space, the top on which solder so far has not adhered, and the safety features.

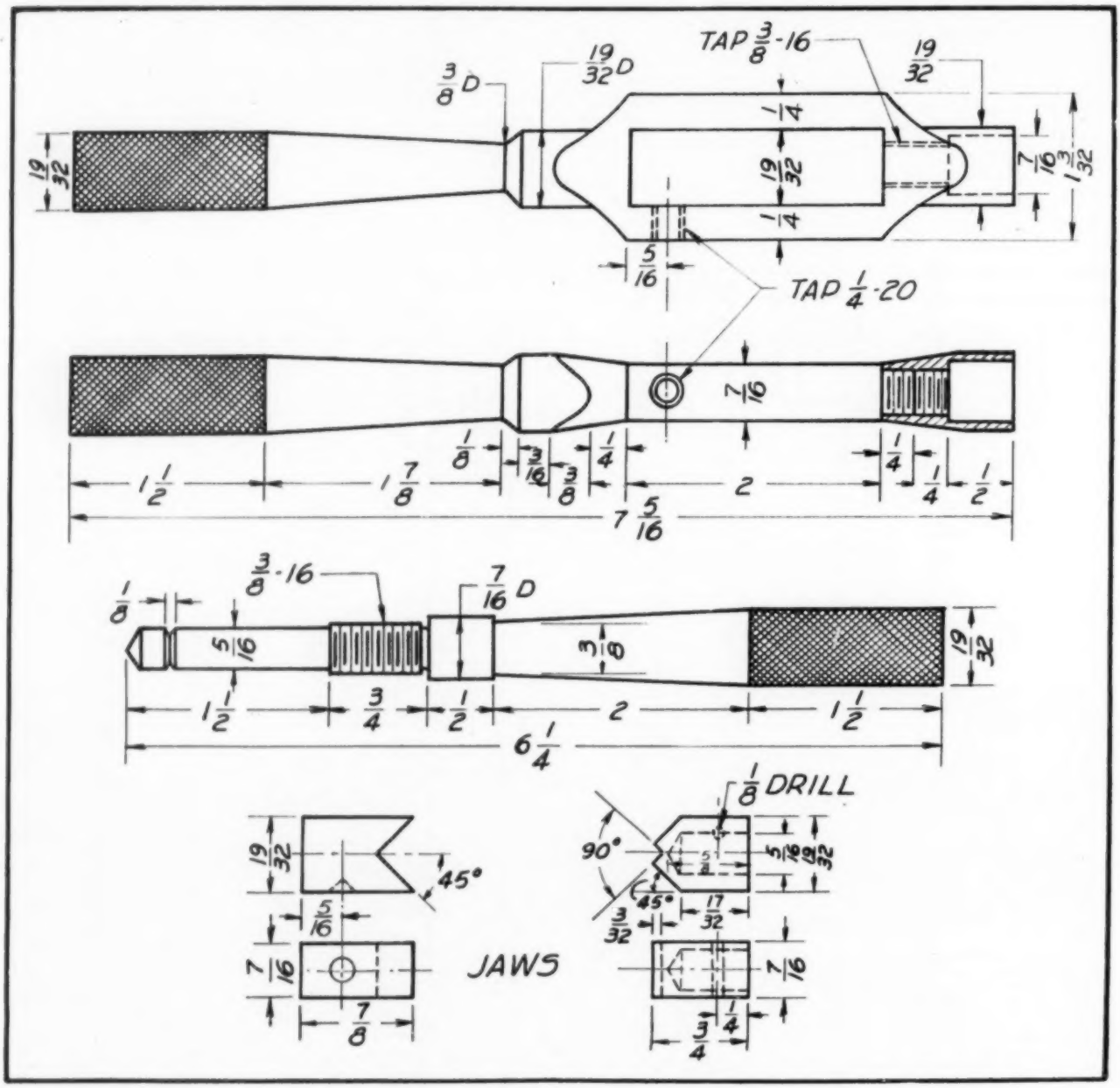
HOOD AND BLOWER FOR WOOD PLANER

TAYLOR A. HARTER
General Shop Instructor
Teachers College
Oswego, N. Y.

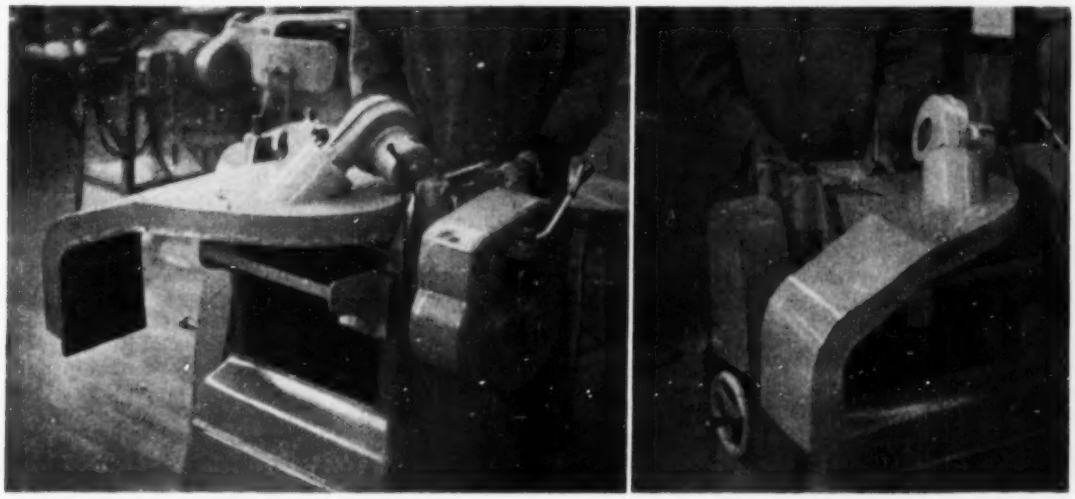
One of the most serious problems confronting a teacher in a comprehensive general shop is the control of dust caused by sawdust and shavings from woodworking machines. This problem is aggravated where the shop includes textiles, graphic arts, and wood finishing activities.

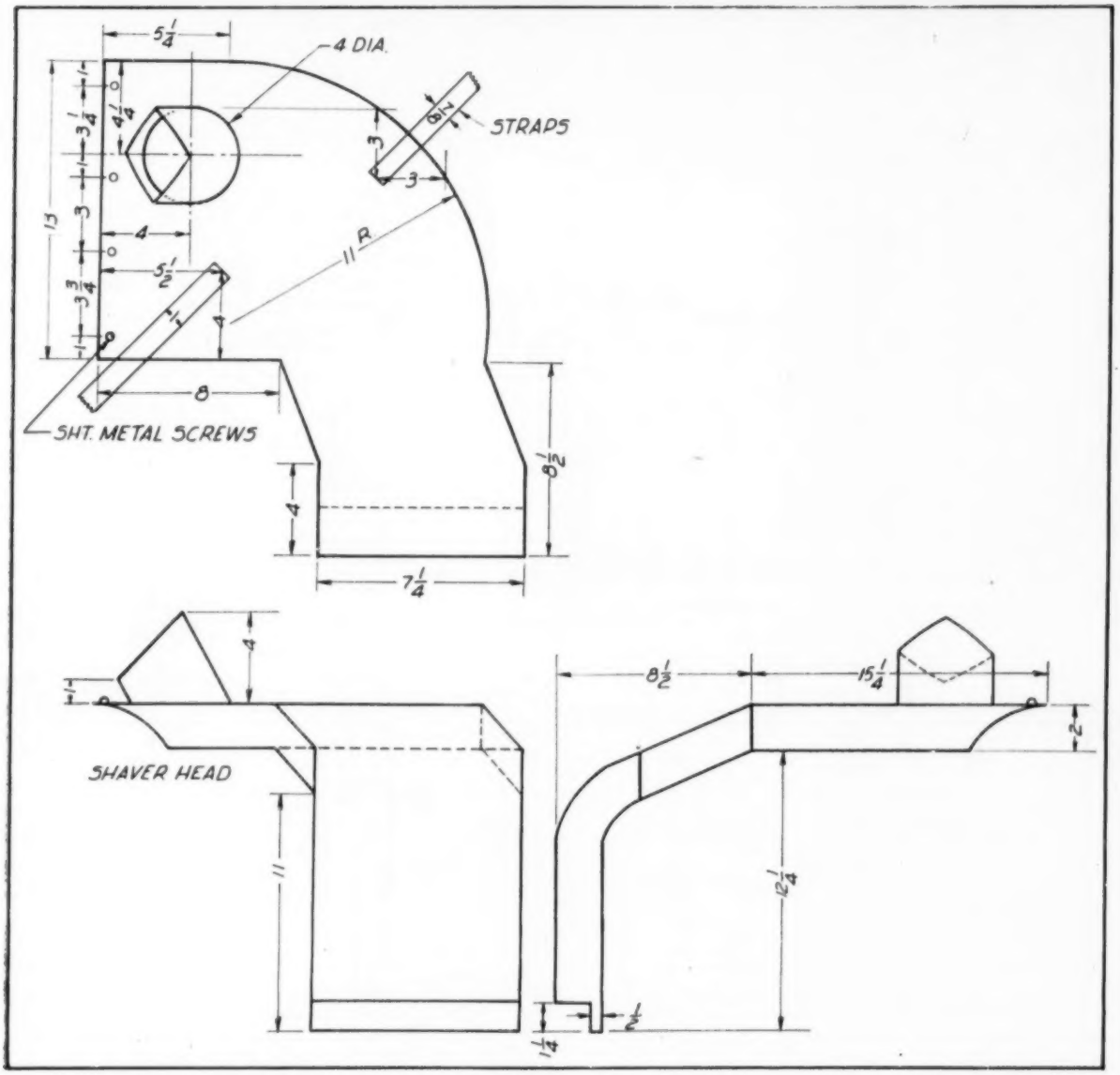
A recent piece of woodworking equipment common to many general shops is the small wood planer. This permits buying rough lumber at a cheaper price and dressing it to the size as needed. Offsetting the convenience and money saved in buying lumber this way, are the shavings and sawdust scattered about the shop when the planer is used. The planer thus becomes the greatest dust offender of all the woodworking machines in the general shop.

The hood similar to the design pictured



Detailed drawing of a tap wrench by Forrest Knoss, metal-shop instructor, High School, Faribault, Minn.





Details and halftone of the hood and blower for a wood planer, by Taylor A. Harter

on the Parks 12-in. planer can be constructed for planers made by other firms. This design was finally adopted after having tried many other variations. The hood may be of any 26 gauge metal. Galvanized iron works the best because it can be easily soldered to make airtight seams.

The chips, as they leave the chip breaker and shaving hood constructed on the planer by the manufacturer, do not have enough force to carry them through the hood of galvanized iron and the outlet pipe. Since clogging becomes a problem in any hood design, the addition of a blower is necessary to force the chips through the hood and outlet. This blower should be mounted as near the opening where the shavings leave the chip breaker as possible. The blower used on the Parks planer is an inexpensive photographic darkroom blower, costing about $10. Any vacuum cleaner motor will work equally well or slightly better because of the increased capacity of the motor and fan.

The sheet metal hood and blower are attached to the planer's cast iron hood by drilling and tapping for four machine screws. To support the weight created by the overhang, two sheet metal straps are soldered to the hood and secured to the lock nut stud on the top of the pressure bar.

If the planer motor is 220 V — 3 phase, as the one pictured, and the blower motor is 110 V it will necessitate having two separate switches.

INDIAN SILVERSMITHING

BEN HUNT
Hales Corners, Wis.

Western Tie

The neckties, shown herewith, are comparatively new in the Southwest. Worn with a sport shirt they add a bit of color. The size, as shown in the illustrations, is made to fit a four strand, round lanyard of leather lacing. A heavy round shoelace, which will make it just a bit thinner, also may be used. The slide, however, should not be too loose on the shoelace or lanyard. Twenty-six gauge silver is heavy enough for the slide, although the writer has made some of 24-gauge silver.

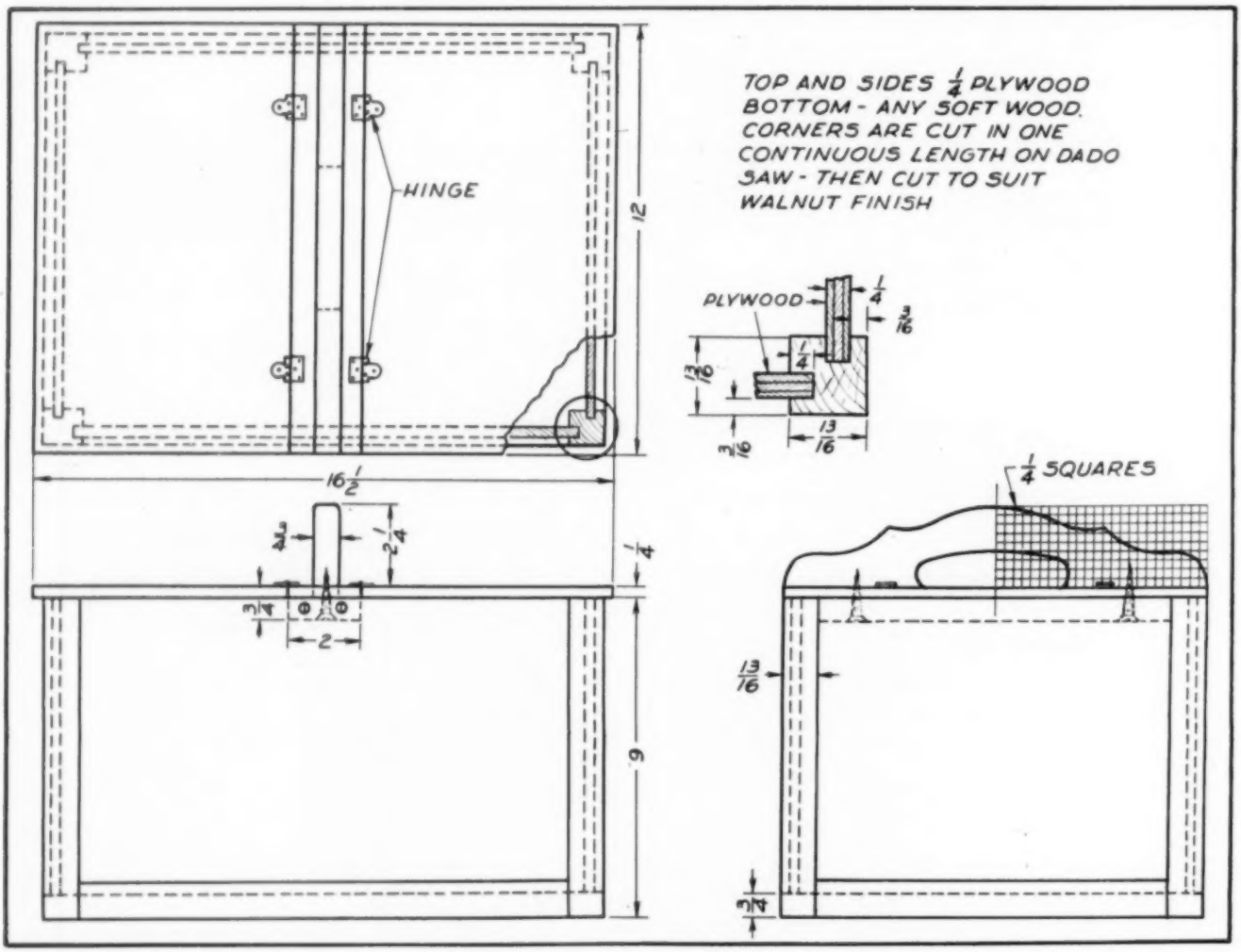
There are several methods of bending or forming the slide. The silver may be bent over a nail with a small round-nose pliers, or over a form made of a piece of iron, or even over a form of maplewood.

In order to be certain to have the stone and other ornamentation centered properly, the bezel and the ornament are soldered on after the slide is formed and soldered.

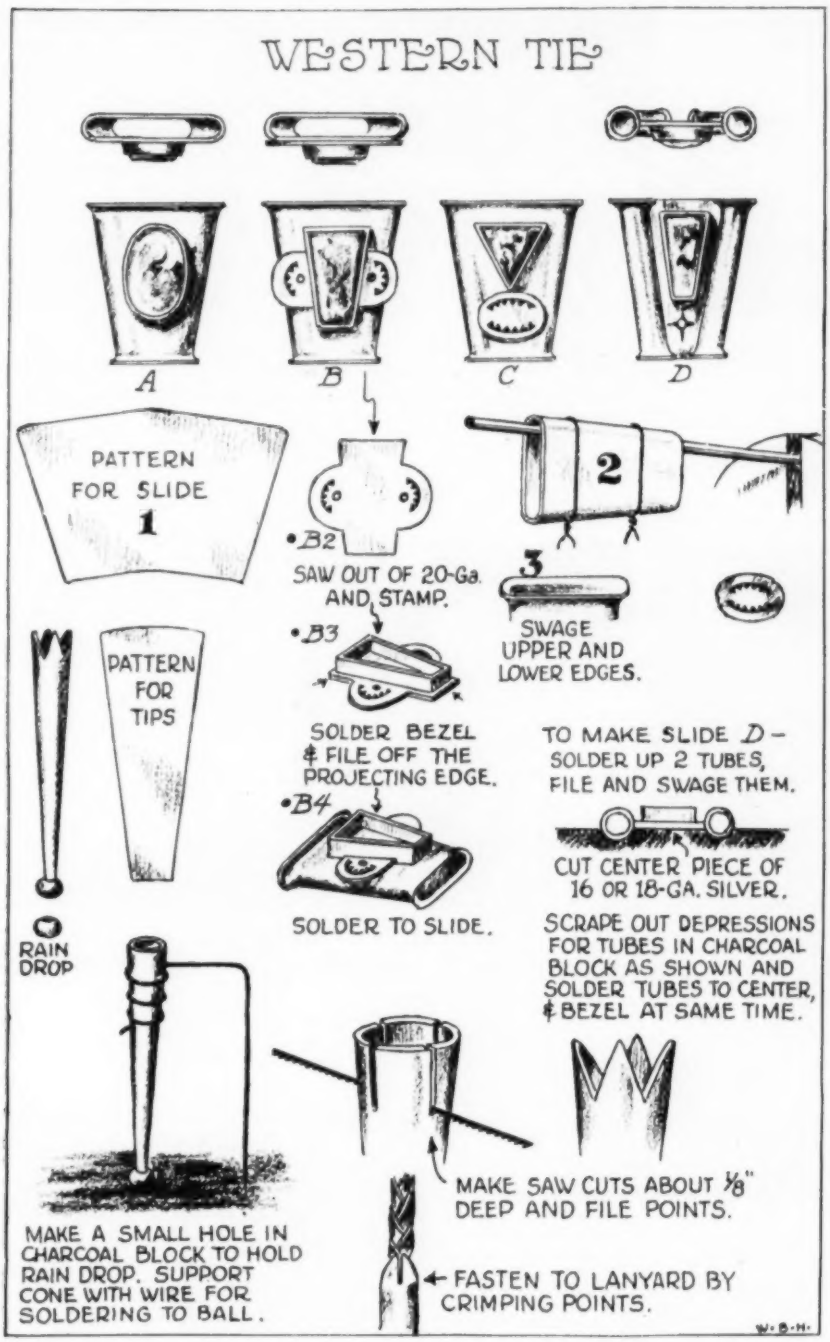
At *A* is shown a plain slide with only a piece of turquoise for ornament. At *B* is shown one with a bezel that is soldered over another stamped piece. See *B2*, *B3*, and *B4*.

The slide at C has the stone above and a stamped piece soldered below it.

The one at *D* is a little more complicated. Solder up a piece of silver to make the tubing, and make it fit the leather lanyard or the shoelace that you are using. Swage the ends



Portable sewing box by Louis Barocci, High School, Cudahy, Wis.

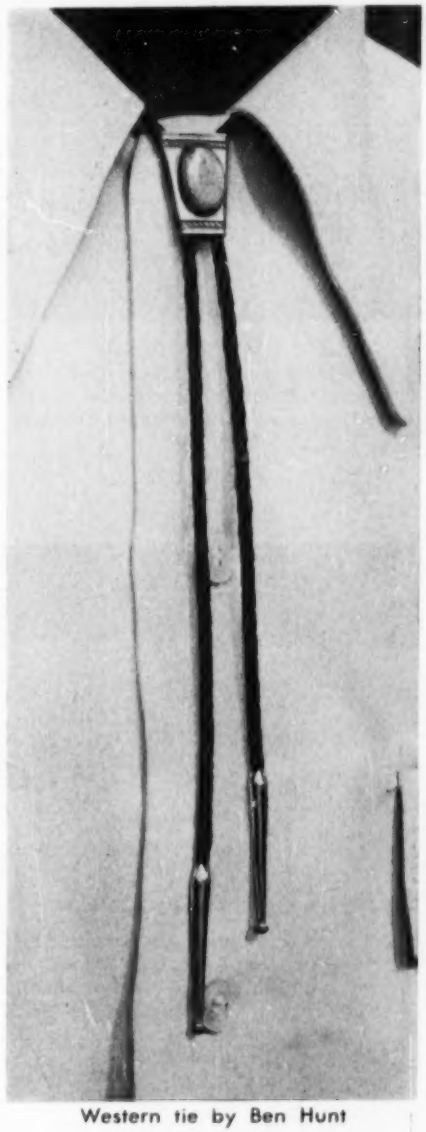

WESTERN TIE
A
B
C
D
PATTERN FOR SLIDE 1
•B2
SAW OUT OF 20-Ga. AND STAMP.
2
3
SWAGE UPPER AND LOWER EDGES.
•B3
SOLDER BEZEL & FILE OFF THE PROJECTING EDGE.
PATTERN FOR TIPS
•B4
SOLDER TO SLIDE.
TO MAKE SLIDE D – SOLDER UP 2 TUBES, FILE AND SWAGE THEM.
CUT CENTER PIECE OF 16 OR 18-GA. SILVER.
SCRAPE OUT DEPRESSIONS FOR TUBES IN CHARCOAL BLOCK AS SHOWN AND SOLDER TUBES TO CENTER, & BEZEL AT SAME TIME.
RAIN DROP
MAKE SAW CUTS ABOUT 1/8" DEEP AND FILE POINTS.
MAKE A SMALL HOLE IN CHARCOAL BLOCK TO HOLD RAIN DROP. SUPPORT CONE WITH WIRE FOR SOLDERING TO BALL.
← FASTEN TO LANYARD BY CRIMPING POINTS.
W.B.H.

Patterns for slides and tips

a bit and solder the whole assembly at one time. By scratching out depressions in the charcoal block the tubes, centerpiece, and the bezel can be carefully placed and soldered at one and the same time.

The tips are easily and quickly made. Cut out the silver according to the pattern and bend it around a slender tapered cutter punch, or file a nail to shape it over. Solder the *raindrop* to the end of the tip as shown in the lower left-hand corner. When soldered and filed, the larger end of the cone is sawed and shaped as shown. This forms a nice edge for crimping over the lanyard.

For braiding the lanyard about 16 ft. of brown or black leather lacing will be required, as the lanyard should be about 30 in. long. Probably you know how to do four-strand round braiding, but if not, the method may be found in almost any book on leatherwork, or refer to the Boy Scout handbook. If you use the flat lacing, do not braid it too tight or it will be rather stiff. That is why the round shoelace has been suggested because it



Western tie by Ben Hunt

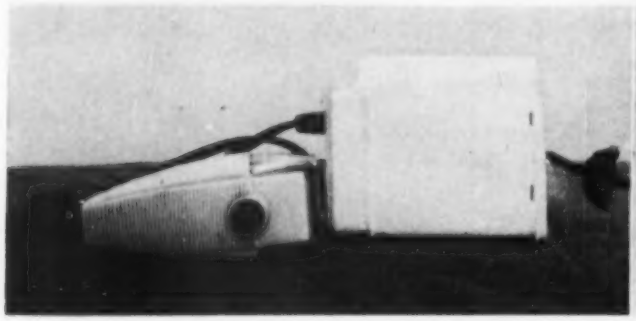
is much softer and more pliable. The leather lanyard, however, looks richer and only requires about two hours to make. Give it a coat of shoe polish before assembling.

A.C.–D.C. CONVERTER FOR ELECTRIC SHAVER

HARRY J. MILLER
Instructor of Electricity
Gillespie Junior High School
Philadelphia, Pa.

Students of electricity of every age level will discover this simple converter of house alternating current to direct current a worthy project, especially if there are folks at home who use electric shavers.

It is conceded by manufacturers and users that an electric shaver will run better on direct current than on the alternating current which dominates the electric current in the



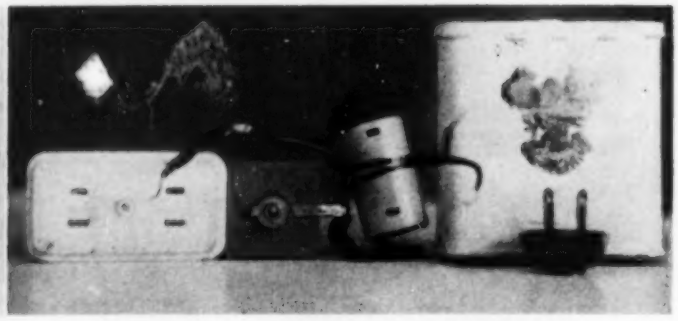


Fig. 1 (at left). Enclosed in a metal band-aid box, the converter makes an acceptable shop project and a welcome gift for home folks. Fig. 2 (at right). Parts required: a single or duplex receptacle to receive the converted direct current for the shaver; a 200-m.a. selenium rectifier with maximum RMS volts of 130; a 20-microfarad, 450 d.c. working voltage; a band-aid box; plug, wire and a few machine screws

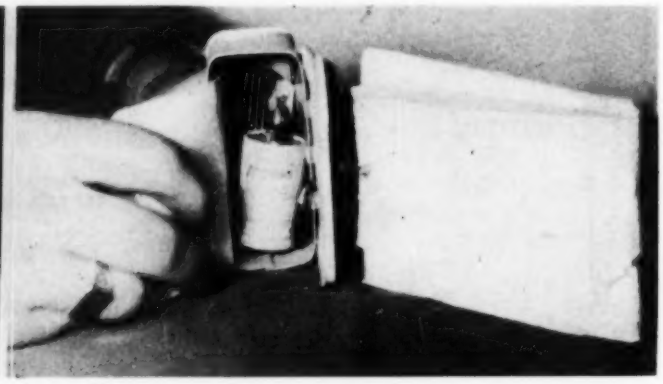
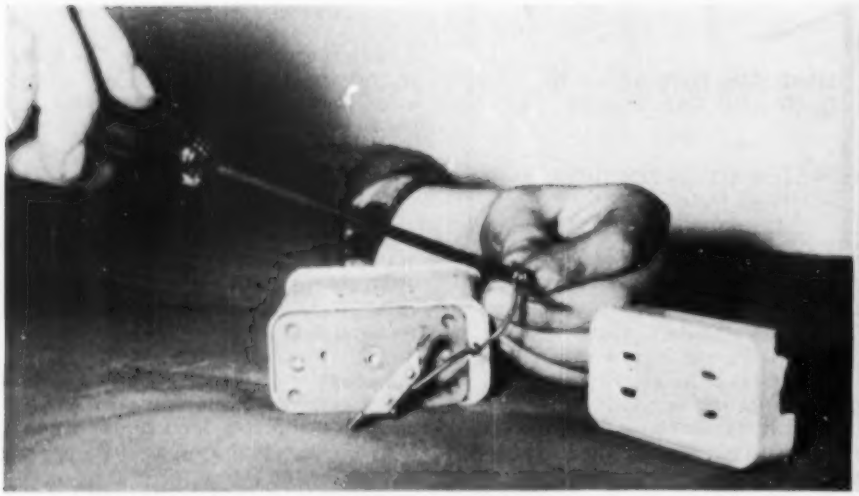


Fig. 3 (at left). Use solder sparingly; be sure to shake out any pieces that fall in between the plates of the rectifier. Use resin core solder, not the acid type. Fig. 4 (at right). Use short wires for the connections; line sides of band-aid can with thin sheets of asbestos paper



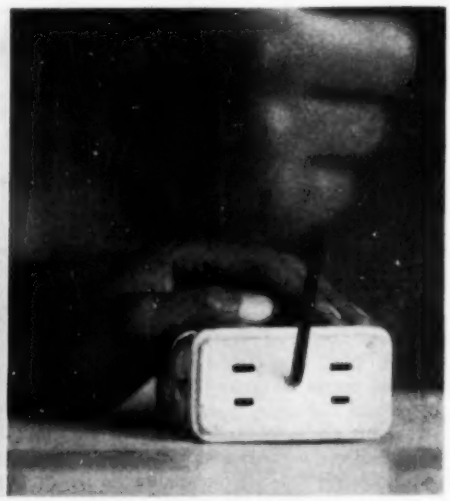


Fig. 6 (at left). A hole drilled in the bottom of the band-aid can permits entry of the d.c. output wires to the duplex or Amphenol receptacle. Fig. 7 (at right). A single screw mounts top of the duplex receptacle to the base which has been fastened to the can's bottom

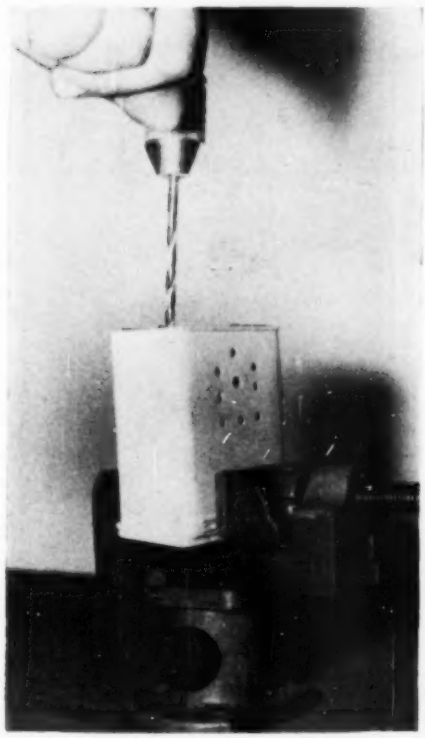


Fig. 5. Mount the rectifier with a single mounting machine screw

A study of the principles involved in selenium rectifiers and dry-type condensers, often paves the way for an awakened interest in their uses in radio and video, and the great sphere of uses in ore extraction and other electrolytic operations that require vast quantities of direct current reclaimed by conversion form the easier-produced alternating current flow.

As Figure 1 and the diagram in Figure 9 shows, a 200 milliamp selenium rectifier is wired in series with a line cord and a 20 microfarad electrolytic condenser having a 450 volt d.c. working voltage, with the rectifier having a maximum RMS voltage rating of 130.

A short lead terminates in a plug projecting from one end of the enclosing box, while at the other end of the container an Amphenol or other type outlet is installed.

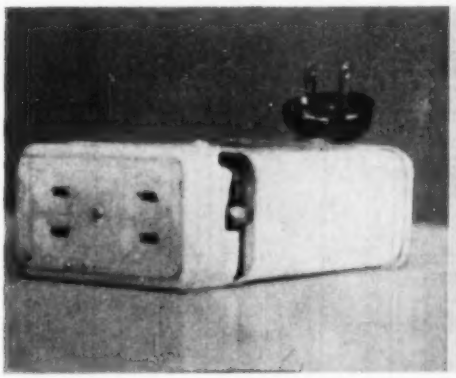
In operation, the plug is inserted in the house a.c. outlet and the shaver plug pressed into the direct-current carrying Amphenol outlet.

Since some heat is developed by the rectifier, line the metal band-aid box with a thin sheet of asbestos paper.

Since it doesn't get too warm, a plastic box makes a more attractive, see-able container and parts are easy of access for repairs through a lid held down with wood screws.

The other sides of the box are held firmly together with regular plastic cement.

Fig. 10. The converter is plugged into the a.c. outlet; the shaver into the d.c. output section, and the student is gladdened by its better performance and by his better understanding of electrical principles learned during its construction



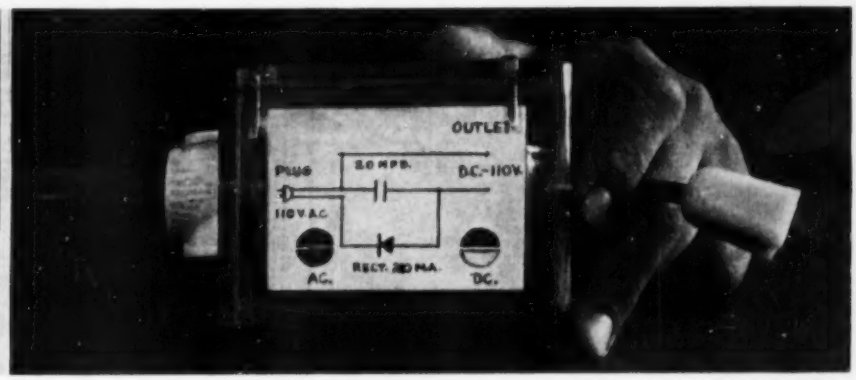


Fig. 8 (at left). A duplex receptacle with each outlet wired in multiple to the d.c. output, permits the use of two shavers at a time. Fig. 9 (at right). A plastic box made in the school shop provides a more attractive container. One side is removable for repairs

country's homes. The added spurt given by direct current results in a speedier, cleaner shave and the converter makes a welcome gift by the student to his dad or brother, as well as to himself when shaving time rolls around. The converter thus made costs but a fraction of those offered commercially.

For the instructor faced with the problem of orienting his charges to the differing characteristics of the two currents, the simplicity of construction and the few parts involved in this converter make his task easier in explaining the action of such devices and their immense industrial application.

TOOLHOLDERS MADE OF CORRUGATED PLASTICS

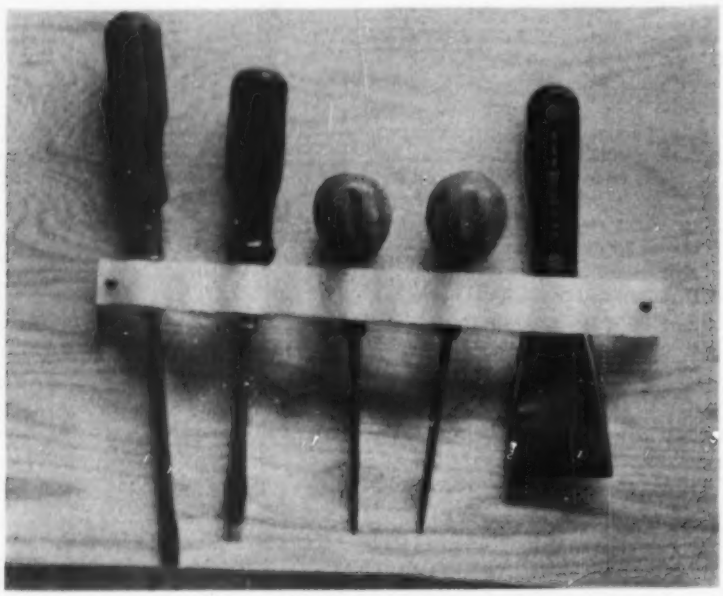
ANDREW R. KOSHER
Head, Plastics Department
Penn Street School
Kingston Vocational School
Kingston, Pa.

Many styles, shapes, and types of toolholders fashioned from various materials have been made in the school and industrial shops. The use of scrap corrugated plastics offers not only a new application for this type of material, but it has many advantages. These advantages are:

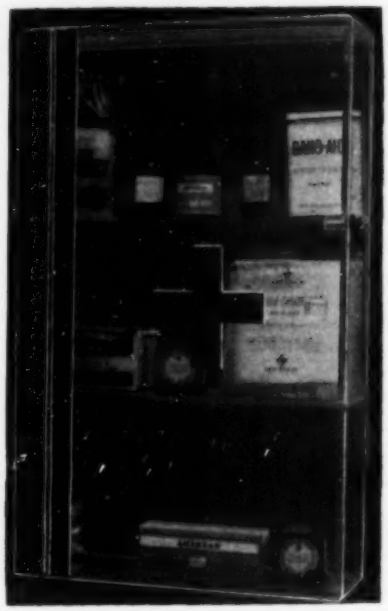
1. It is clean, neat, and colorful.
2. The construction and installation is simple.
3. It offers a practical use of scrap material.
4. Maintenance is reduced as plastics retain their color indefinitely.
5. There is quite a choice offered in standard manufactured sheets of corrugated plastics.
6. The material is flexible and elastic.

Bill of Materials

Any scrap corrugated plastics from sizes .125 by ½ by 3 in., to .187 by 1 by 72 in.



Using corrugated plastics for toolholders



Plastic medicine cabinet

It may be obtained in various frequencies ¾ to 3 in., according to the type of tools to be mounted and the space restrictions offered by the tool panels.

Procedure

1. Lay out the desired width and length.
2. Cut out the corrugated plastic piece with the band saw, scroll saw, jig saw, or circular saw.
3. Sand the edges and cut out the piece.
4. Polish the edges of the plastic holder.
5. Drill one hole on each end of the toolholder.
6. Fasten the toolholder on the panel in any desired manner.

PLASTIC MEDICINE CABINET

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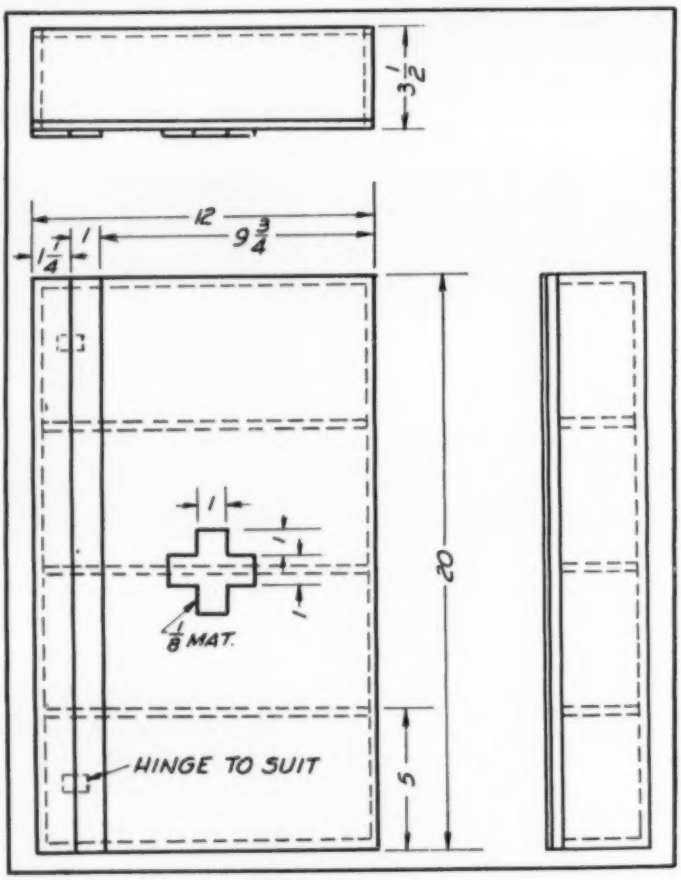
Penn Street School
Kingston Vocational School
Kingston, Pa.

Industrial commercial shops have installed within their departments medicine cabinets of various types. The appearance of these cabinets is also varied, according to the needs and vision of the immediate supervisor. The comparatively new material *plastic* offers many advantages for this application both in its appearance and effectiveness. Listed are some of the advantages in the use of a transparent acrylic plastic for medicine cabinets:

1. Transparency, clear immediate observation of its contents.
2. Simplicity of construction.
3. Cleaning features, arrangement for removable shelves.
4. Appearance, neat and clean.
5. Color, the use of the blue trim and the blue cross denotes relief rather than alarm. The traditional types use the red trim.



Details of the medicine cabinet

6. The use of this material for the application offers both a curious and psychological *thinking* analysis for both the student and the worker, especially in regard to safety.

Procedure

1. Lay out parts on masking paper of plastic sheet.

2. Cut out top, back, bottom, sides, front, and shelves. Cut out the parts, using the circular saw, jig saw, band saw, hack saw, or coping saw.

3. File edges as needed.

4. Sand edges as needed.

5. Polish edges as needed.

6. Lay out sides of cabinet for shelves as indicated by sketch.

7. Cut grooves on sides of medicine cabinet, the purpose of the grooves is to make the shelves removable to facilitate cleaning.

8. Cement the sides of the cabinet to the back.

9. Cement the top and bottom to the back.

10. Lay out and drill holes for hinges.

11. Drill hole for eye hook and catch (undersize). Install same by self-tapping screws driven into the undersize holes.

12. Assemble cabinet.

13. Lay out blue cross on masking tape of plastic.

14. Cut out same.

15. Sand and file as needed.

16. Polish blue cross as needed.

17. Cement blue cross as indicated in drawing.

18. Lay out blue trim for cabinet.

19. Sand and file as needed.

20. Polish blue trim.

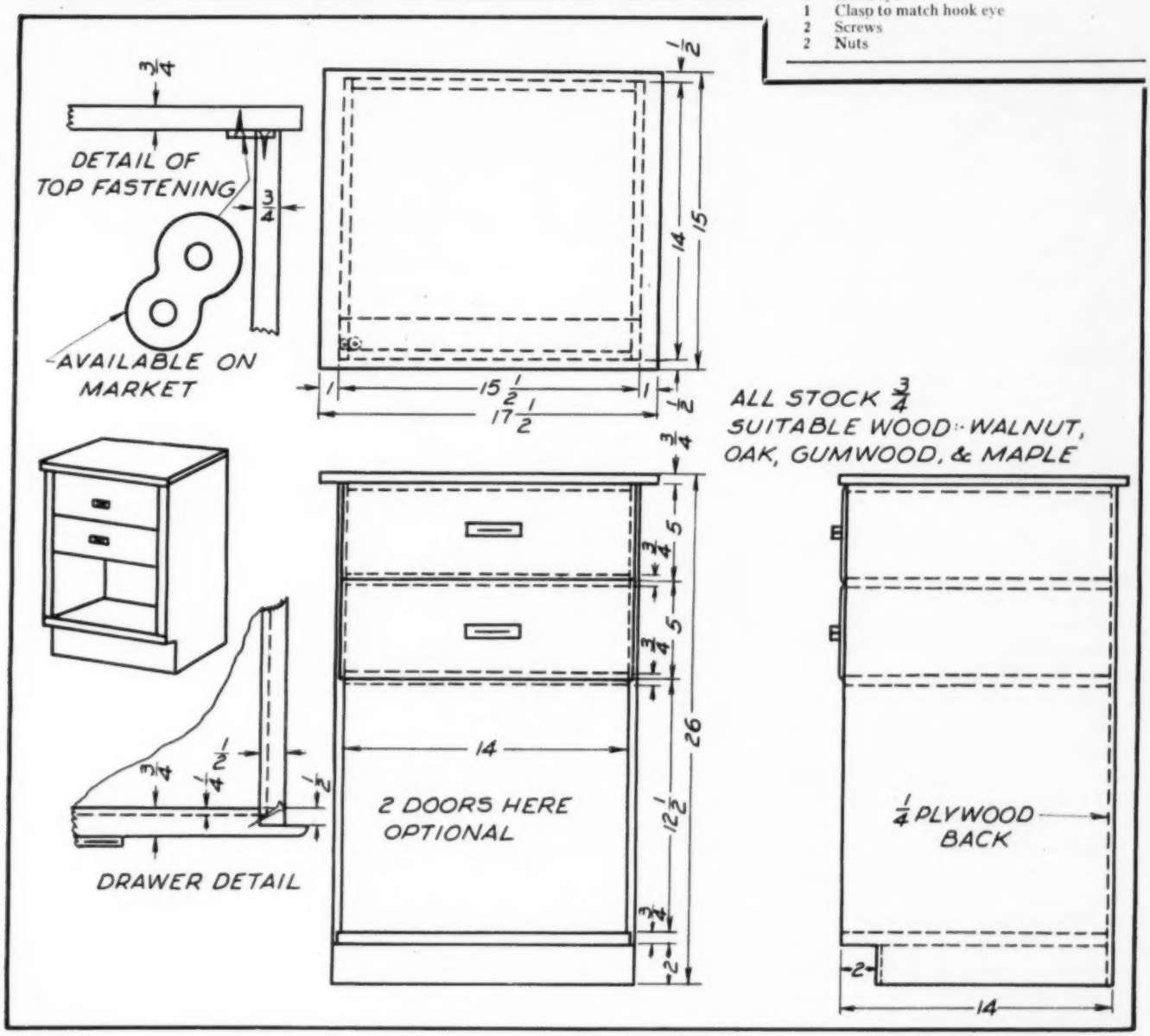
21. Cement blue trim.

22. Polish cabinet, using simoniz, furniture polish, or wax and a soft cloth.

23. Install medicine cabinet according to the needs of the particular shop.

BILL OF MATERIALS

No. of Pieces	*Name*	*Material*	*Size*
1	Back	Transparent acrylic plastic	.250 by 12 by 24 in.
1	Top	Transparent acrylic plastic	.250 by 4 by 12 in.
1	Bottom	Transparent acrylic plastic	.250 by 4 by 12 in.
2	Sides	Transparent acrylic plastic	.250 by 4 by 24 in.
2	Shelves	Transparent acrylic plastic	.250 by 4 by 12 in.
1	Front	Transparent acrylic plastic	.250 by 12 by 24 in.
1	Trim	Translucent blue plastic	.125 by 1 by 24 in.
1	Blue cross	Translucent blue plastic	.125 by 4 by 3 in.
2	Hinges	Chrome	2 by 1 in.
2	Nuts	Chrome	6–32
2	Screws	Chrome	6–32
1	Hook eye		
1	Clasp to match hook eye		
2	Screws		
2	Nuts		



Bedside table by Louis Barocci, Cudahy High School, Cudahy, Wis.

METAL DISPLAY FRAME

JIM COWAN, Student,
and
RALPH A. JOHNSTON, Instructor
John Marshall High School
Los Angeles, Calif.

The visual aid device described and illustrated herewith began as a design problem in the mechanical drafting department. With the many instructional charts and diagrams that could be offered as educational possibilities, it was our desire and problem to present this material to the classes in a manner which would be most effective with the changing classroom situations. We discovered, through continued use, that the metal display frame proved itself most worthy as an educational aid as well as adding to the beautification of the classroom environment.

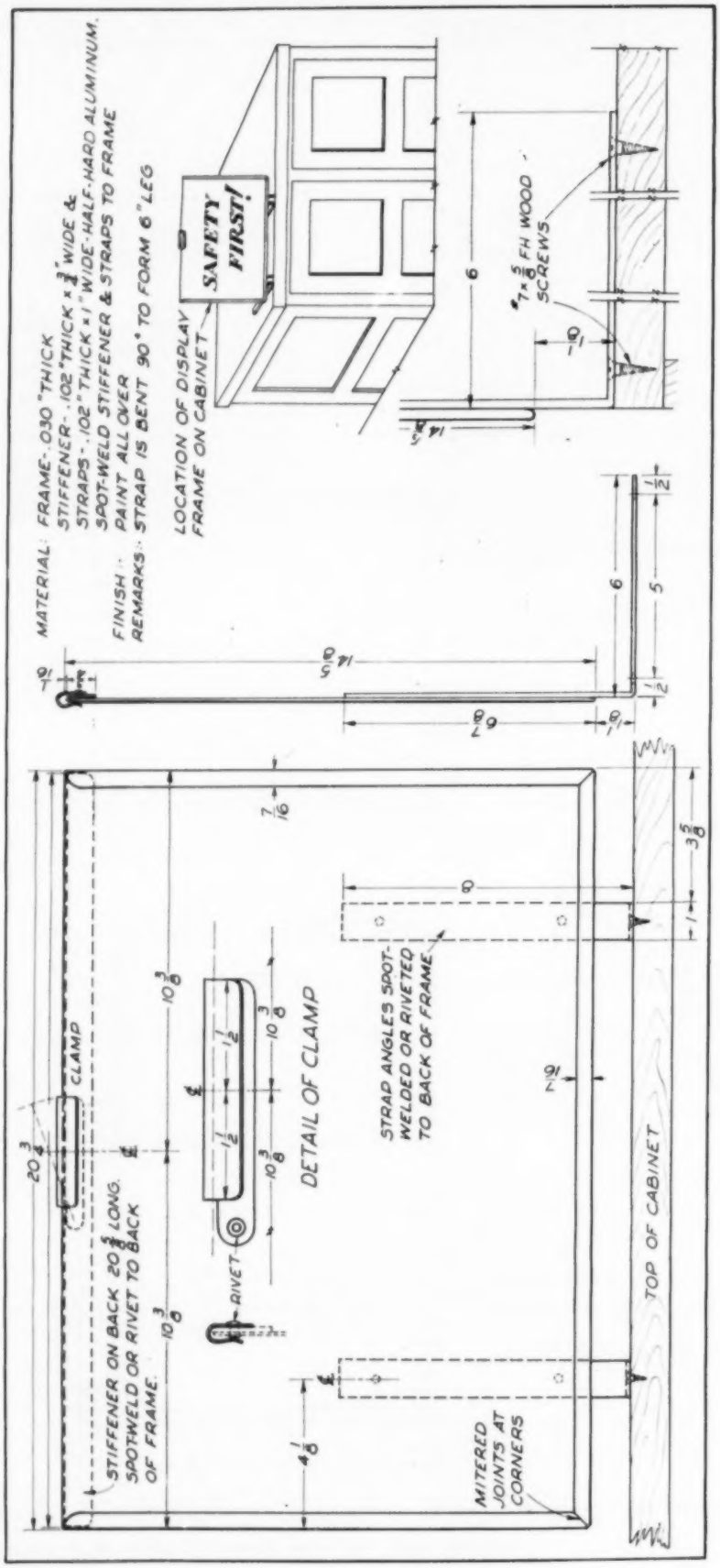
In all school shops, signs of varying natures do play an important part in the processing of all educational activities. The drafting department might include lettering instructions in the display frame; the wood and metal shops might include safety warnings or general instructions in the use of machines or hand tools. Signs indicating electrical circuits would add to the instructional purpose of the electric shop.

Because of the nature of their construction, signs or similar instructional materials are easily damaged and torn unless some means of preserving them can be developed. The metal display frame, as shown in the drawing, will hold signs indefinitely without damage.

The accompanying illustration shows the construction of this frame. By varying the dimensions, it can be adapted for use with almost any type of sign and will be sturdy, practical, and an attractive addition to the school shop.

According to the Association of Casualty and Surety Companies, 26 persons have been injured in motor vehicle accidents to every American serviceman who has been wounded in all of the wars in the country's history. Putting it another way, in half a century, automobile injuries total 2,603 per cent more than all of the U. S. war wounded in one and three-fourths centuries! — *Iowa State College Driving Laboratory News.*

A snow fence made of two-ply paper with an inner layer of fiber and asphalt has been used experimentally in Michigan with generally satisfactory results. The sandwich filler of asphalt promotes resistance to moisture and gives new strength and toughness. In tests, paper snow fencing withstood bad sleeting, heavy rain, and high winds. — *Petroleum Newsnotes.*


SAFETY FIRST!
LOCATION OF DISPLAY FRAME ON CABINET
MATERIAL: FRAME-.030" THICK STIFFENER-.102" THICK x 3/8" WIDE & STRAPS-.102" THICK x 1" WIDE-HALF-HARD ALUMINUM.
FINISH: SPOT-WELD STIFFENER & STRAPS TO FRAME PAINT ALL OVER
REMARKS: STRAP IS BENT 90° TO FORM 6" LEG
7 x 3/8 FH WOOD SCREWS
DETAIL OF CLAMP
CLAMP
RIVET
STRAP ANGLES SPOT-WELDED OR RIVETED TO BACK OF FRAME
STIFFENER ON BACK 20 3/8 LONG. SPOTWELD OR RIVET TO BACK OF FRAME
MITERED JOINTS AT CORNERS
TOP OF CABINET

Detailed drawing showing the construction of the metal display frame

Rustic alphabet submitted by F. N. Newton, Jr., Sharon City Schools, Sharon, Pa.

DRAFTING EQUIPMENT CASE

GEORGE V. CARDINALE
Erie, Pa.

One of the problems confronting teachers of drafting in the junior-senior high schools is that of storing and distribution of drafting equipment such as pencils, triangles, erasers, and the tools common in our school drawing rooms. Where more than one student uses these tools, loss of equipment can become serious. As a means of reducing such losses and avoiding embarrassment to both teacher and student, the instrument holder described herewith was devised. If the holder is placed on the student's desk at the end of the class period, the teacher or appointed student may check for loss of tools quickly and thoroughly.

MATERIALS NEEDED

2 pcs. ¼ by 12 by 12-in. Masonite or plywood
Wood glue or rubber cement
Felt or "Suede-Tex" or black and white enamel

Procedure

1. *Masonite* or plywood cut to 12 in. square.

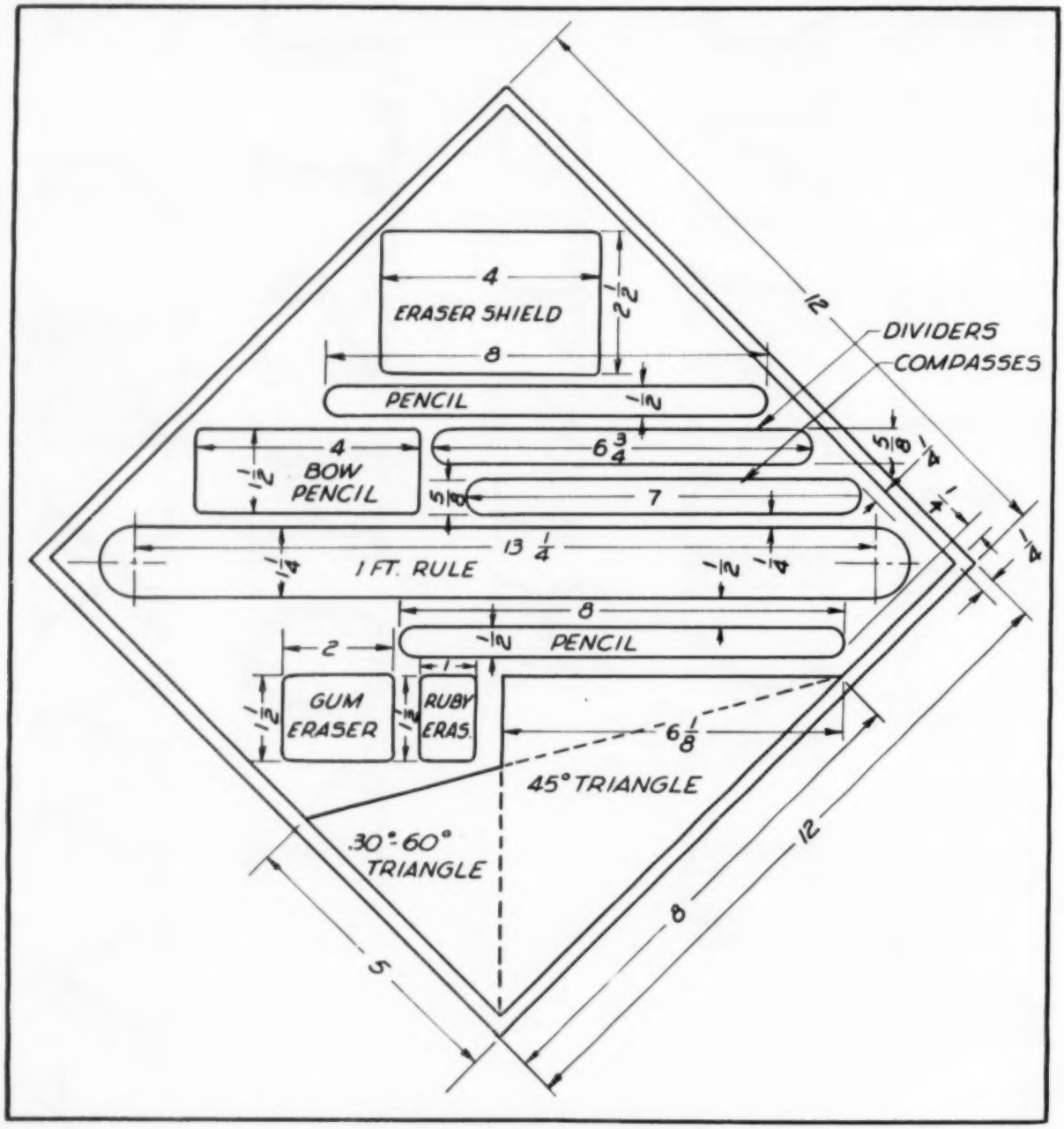
2. Piece No. 1 is pierced-sawed as indicated in drawing.

3. Piece No. 2 is painted white, covered with felt or *Suede-Tex*.

4. The two 12-in. square pieces are glued together.

Felt is preferred to paint or other material since it will last longer and will offer some protection to the instruments. The purpose of applying paint or felt to the lower section (piece No. 2) is to create a sharp contrast in each opening of Piece No. 1.

By numbering each open section a missing tool may be readily identified.



Details of the drafting equipment case

Where will he learn high speeds... close tolerances?

In industry, where progress is measured in pay checks instead of report cards, all students don't start even. Some already have the knack of working with fine production tools. High speeds . . . close tolerances . . . are things they don't have to learn *after* they get a job.

The tools they're trained on make a difference!

Your school shop can have the tools of production for very little more than outmoded, outdated equipment. Cincinnati Lathes and Drills can perform 90% of industry's jobs. They have all the features of the very finest lathes and drills. And they're safe. Yet they are priced well within school budgets.

Today . . . write, on your school letterhead, for catalogs, prices and the name of your local Cincinnati Lathe dealer. Cincinnati Lathe & Tool Co., 3211 Disney, Cincinnati 9, Ohio.

ASSOCIATION NEWS

(Continued from page 6A)

his needs. Shopwork of this kind should be given depth more than breadth for graduate credit.

Homer J. Smith gave a short résumé of the Thursday, Friday, and Saturday discussions.

New members admitted were Doctors Hardin and Jarvis, and Mr. Claude of the Illinois State Office.

The 1954 meeting of the Conference will be held next November 11, 12, and 13.

THE 1953 AVA CONVENTION

Chicago, the host city to the members of the American Vocational Association, November 22 to 27, 1953, cannot be complimented too highly for a job well done. The attendance again proved that a central location will draw the largest numbers. The registration was approximately 4000, which means that the total attendance exceeded this number.

The first general session of the convention was held at 7:00 p.m., on Monday, November 23.

Donovan R. Armstrong, AVA vice-president for distributive education, presided.

Rev. Joseph Coyne, dean of technical studies, Saint Rita High School, Chicago, Ill., said the invocation prayer, and Benjamin C. Willis, superintendent of schools, Chicago, gave the welcoming address. He praised the AVA members for making reading and mathematics live for boys, girls, and adults.

Herold C. Hunt, professor of education, Harvard University, Cambridge, Mass., spoke on "What's All the Fuss About." America must prepare its youth to shoulder responsibilities, and to do this we must aim to get better, rather than cheaper, education.

Mrs. John G. Lee, president, League of Women Voters of the United States, Washington, D. C., spoke on "Vocation or Avocation." She emphasized the need of education to instill in youth the will to adjust, explore, and experiment, rather than look for the easy way out.

The second general session, held on Tuesday, November 24, at 7:30 p.m., was opened by Martha Creighton, president, American Vocational Association.

The invocation was said by Rabbi Louis J. Lehrfield, Austin Community Temple, Chicago, Ill.

Roy G. Fales, AVA vice-president for industrial arts, and chief, State Bureau of Industrial Arts, Albany, N. Y., presided.

Honorable W. M. Abbitt, congressman from the Fourth District of Virginia, gave an address in which he explained why he supported vocational education.

The main speaker of the evening, Honorable Harold E. Stassen, administrator, Foreign Operations Administration, then spoke on "Vocational Progress and World Peace."

He advocated that we open our institutions to the teachers and youth of other countries. This will give a better understanding between us and the rest of the world and make World War III less likely.

The AVA banquet and dance was held on Wednesday evening.

Martha Creighton, president, presided.

The invocation was said by Rev. George Ehrich, pastor, Redeemer Evangelical Lutheran Church, Chicago, Ill.

Edward J. Condon, vice-president in charge of public relations, Sears, Roebuck and Company, Chicago, Ill., was the toastmaster.

H. Roe Bartle, administrator, American Humanics Foundation, Kansas City, Mo., delivered the address of the evening. He titled it "I Believe," and he stressed the point that we shall put aside the hates and suspicions inherited from the last war and help bring up our youth as God-fearing and God-loving citizens of our glorious land, who are cognizant of the eternal truths and values.

The banquet was immediately followed by the annual dance.

Industrial Arts Meetings

An industrial-arts education tour through Duro Metal Products and Logan Engineering Company plants was arranged for Monday from 11:00 a.m. to 4:00 p.m. A very excellent luncheon was served at Allgauer's restaurant to those who took the tour.

Tuesday noon the National Association of Industrial Teacher Educators held a luncheon meeting at which E. C. Perry acted as chairman.

Robert W. English, director of education, American Institute of Baking, Chicago, Ill., was the main speaker on this occasion. His address was on "What America's Industries Need From Industrial Education." He felt that industry expects the schools to understand industry's problems, and give students the right attitudes and habits rather than skill alone. Industry must also be acquainted with the difference between industrial arts and vocational education.

At the business meeting conducted by A. P. Twogood, the following officers were elected: president, Art P. Goodyear; vice-president in charge of T & I, Mel Barlow; vice-president in charge of industrial arts, Duane Chamberlain; trustee, Glen E. Smith.

At the industrial arts section meeting of the National Association of Industrial Teachers Educators, on Tuesday afternoon, E. W. Tischendorf, head of industrial arts, Kent State University, Kent, Ohio, presided.

John J. Jarvis, dean, The Stout Institute, Menomonie, Wis., reported on the study which he made on the "Student Survival Factors in The Stout Institute."

Roderick G. Kohler, associate professor of industrial arts, Northern Illinois State Teachers College, DeKalb, Ill., reported on his study of the "Status and Trends in Graduate Industrial Teacher Education in the United States."

Donald Maley, industrial education department, University of Maryland, College Park, Md., reported on the study he made of "Student Teaching in Industrial Arts."

Robert A. Tinkham, assistant professor of industrial education, University of Illinois, Urbana, Ill., reported on the study he made of "Design in Industrial Arts."

A study made of "Experimental Determination of the Value of the Mirror as an Aid in Demonstrating Operations in Industrial Arts," was reported by Welcome E. Wright, associate professor, Texas A. & M. College, College Station, Tex.

H. H. London, professor of industrial education, University of Missouri, Columbia, Mo., reported on a study made by Charles G. Risher, on the "Relationship of Scholastic Attainment to Rated Success as a Beginning Industrial Arts Teacher."

J. Levan Hill, professor of industrial arts, Bowling Green State University, Bowling Green, Ohio, reported on his "Study of the Various Aspects of Industrial Arts as Influenced by the Changing Conditions of our American Civilization from 1880 to 1950."

At the Wednesday morning meeting of the industrial arts, and trade and industrial education group, the methods of teaching industrial arts were discussed.

Homer J. Smith was the chairman.

Walter A. Klehm, head, department of industrial arts, Eastern State College, Charleston, Ill., in discussing "Course Outlines, Texts and References, and Lesson Plans," pointed out that the teacher must help the students get a selected group of experiences, and that it is the instructor, not the student who must make the selection.

The outline reduces this selection to writing, and economy of time and energy means that group demonstrations must be made. These demonstrations must be made before the entire class at first, but to smaller groups later on, when this is feasible.

"Instruction Sheets, Teaching Aids, Trips," were discussed by Sylvan A. Yager, chairman, Department of Industrial Education, Indiana State Teachers College, Terre Haute, Ind.

The teacher is confronted with the question "What is best for my students, and how can I best give it to them?" Instruction and planning sheets help both instructor and student, as do also the teaching aids. Some of these aids must be made by the teacher, others can be bought, and still others may be obtained gratis from manufacturers or dealers.

Trips to industrial plants should be thoroughly organized, and then discussed with the class.

"Projects and Jobs, Drill, Production" was the subject discussed by Lowell L. Carver, professor of industrial education, Iowa State College, Ames, Iowa.

The project to the boy is something that he can make and show. It teaches appreciation of tools, materials, design, etc. They should not be too small nor too large.

Eugene D. Fink, chief, State Bureau of Industrial Teacher Training and Vocational Curriculum Development, Albany, N. Y., pointed out that related information must be geared down to the understanding of the student.

"Facilities, Class Size, Management Routine, Records," was the title of the address given by F. Tennis Kresse, director and instructor, Industrial Arts, Edina-Morningside High School, Minneapolis, Minn.

He pointed out that unit shop teachers must be retrained if they are to take over a general shop. Junior high school shops should be kept down to 24 or less students per period; senior high school 15 to 18 students per class.

Jack Morgan, department of industrial education and art, State Teachers College, Pittsburg, Kans., gave a fine summary of the entire program.

A fine plastic crafts demonstration was also held on Wednesday morning under the chairmanship of Raymond Cherry, head, industrial arts department, Lockport Township High School, Lockport, Ill.

The demonstrations were as follows:

Carving of Plastics — Frank Delvie, manager, Plastic Products Company, Salt Lake City, Utah;

Forming and Bending of Plastics — K. A. Paulson, chief, manual arts therapy, Veterans' Administration Hospital, Hines, Ill.;

Cementing and Dyeing Plastics — Coleman Hewitt, chairman, industrial arts department, Chicago Teachers' College, Chicago, Ill.

On Wednesday afternoon "Planning the Industrial Arts Shop" was discussed.

Verne L. Pickens, division chairman, division of practical arts, Kansas City, Mo., was the chairman. The discussion panel consisted of:

W. P. Klingensmith, supervisor, division of industrial arts, Chicago, Ill.;

W. R. Mason, supervisor, industrial arts, Cleveland, Ohio;

Stanley J. Pawelek, supervisor, division of vocational education, Baltimore, Md.;

M. J. Ruley, supervisor, industrial arts and vocational education, Tulsa, Okla.;

Fred J. Schmidt, Jr., head, industrial arts department, Ball State Teachers College, Muncie, Ind.;

John H. Storms, assistant professor, industrial arts education, State Teachers College, Oswego, N. Y.;

Harry O. Thomas, state supervisor, industrial education, Baton Rouge, La.

The gist of the deliberations brought out that the type and size of shop must be determined from certain data. The ratio of width to length should be 1 to 2 or 2 to 3. Safety factors must be embodied in the building plans, good lighting, both for day and evening classes must be arranged for. There must be ample fire protection, and fire alarms; also washing facilities, and about 100 sq. ft. space per pupil. The ceiling height should be approximately one half of the width of the room, and the glass surface should be about 20 per cent of the floor area. The light

(Continued on page 18A)

ATF *Good School News*

GRAPHIC ARTS—THE EDUCATIONAL FIELD WITH A FUTURE

American Type Founders, Educational Services Department, 200 Elmora Avenue, Elizabeth, New Jersey

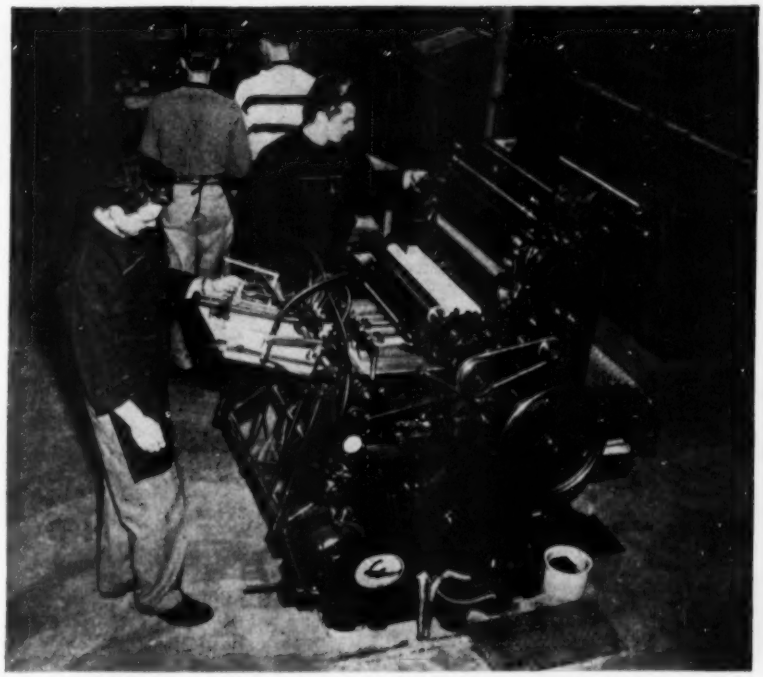
Vancouver Has Complete Graphic Arts Program

A complete graphic arts course is now being offered in Vancouver, Wash., by Clark Junior College, Vancouver and Washington high schools—all operated by School District 37.

More than a thousand students, ranging from 10th grade high school sophomores to trade extension and trade training men are given thorough practical training in both letterpress and offset printing.

The well-equipped shop occupies two floors of Clark College's new million dollar building for vocational and applied arts. The new 17 x 22 ATF Chief, shown to the right, was selected for training students in the offset process. A 14" ATF darkroom camera and a No. 4 Little Giant are also in operation. Other ATF distributed equipment includes a Challenge drill, Diamond paper cutter and a Morrison saw and router unit.

The aims of the graphic arts division, according to Dean Oliver B. Klossner, are "... to give the students a complete view of graphic arts theory through job work, classroom instruction, movies, plant visits and lectures...".



ATF 17x22 Chief at Clark College Graphic Arts Division trains students in offset printing.

ATF 14" darkroom camera gives Vancouver printing students actual experience in making plates for offset work.

ATF Helps Solve School Problems

ATF maintains a Specialized Department of Education to assist vocational schools in laying out a graphic arts shop, outlining training courses and finding competent instructors. ATF also serves as a source of supply for all printing equipment. Write for your copy of ATF's booklet, "Career Opportunities in the Printing Industry".

Alabama School of Trades at Gadsden installs new ATF Little Giant Press

The popularity of ATF Little Giant presses for graphic arts instruction is rapidly increasing. With the installation at Gadsden they are now being used in schools of thirty four states.

Because it operates on the same principle as the Kelly and other larger presses, the Little Giant is a particularly valuable training tool. It not only introduces students to the whole field of letterpress printing, but the Little Giant itself is finding ever increasing use in the graphic arts industry. Its centralized controls facilitate both operation and instruction. Also, being completely guarded and easily braked for immediate stops, the Little Giant 6 is easily the safest press on the market today. A Micro-Safety switch prevents operation when the press' side guard panels are removed.

This ATF Little Giant is now being used in the graphic arts vocational course of the Alabama School of Trades at Gadsden, Alabama. An ATF Big Chief offset press is also in use here.

ASSOCIATION NEWS

(Continued from page 16A)

should be about 20 to 30 foot-candles on an average.

The session on woodcraft demonstrations was under the chairmanship of Roy A. Radtke, supervisor, industrial arts, Milwaukee Public Schools, Milwaukee, Wis.

The speakers presented the following subjects: "What's New in Laminates" by John Moore, architectural representative, Midwest Area, U. S. Plywood Company, Chicago, Ill.; and "Woodworkers' Design and Their Debt to the Age," by Alex Bick, industrial arts instructor, Milwaukee Public Schools, Milwaukee, Wis.

At the Wednesday afternoon session which discussed the general shop of the future, George F. Henry, head, industrial arts education department, Colorado A. & M. College, Fort Collins, Colo., was chairman.

The panel members were J. O. Johnson, director, industrial arts and special services, Denver, Colo.; H. H. London; John Newell, supervisor, industrial arts, Chicago, Ill.; Alan R. Pawelek, chairman, industrial arts department, Western Washington College of Education, Bellingham, Wash.; and Lawrence W. Prakken, editor, School Shop, Ann Arbor, Mich.

They discussed respectively: "The Course of Study in the General Shop of the Future," "Equipment Selection for the General Shop of the Future," "Methods for Teaching in the General Shop of the Future," "Instruction Materials for Use in the General Shop of the Future," and "The Teacher in the General Shop of the Future."

Walter R. Williams, Jr., state director of vocational education, Tallahassee, Fla., summarized the presentations.

Thursday — the Thanksgiving holiday — was evidently not so considered because there were numerous scheduled meetings and those devoted to industrial-arts subjects were exceptionally well attended.

(To be continued)

MASSACHUSETTS INDUSTRIAL EDUCATION 56th ANNUAL MEETING BANQUET

The 56th get-together banquet of the Massachusetts Industrial Education Society will be held at the Hotel Shelton, Bay State Road at Kenmore Square, Boston, Mass., on Saturday, January 16, 1954.

Social period at 5:30 to 6:00; dinner at 6:00 p.m.

The program will be a panel discussion presented by Vinton G. Jones, director of guidance, Braintree School Dept.; Dr. Robert G. Andree, principal, Brookline High School; and the third member, a college officer representing Accrediting Association, to be chosen.

The theme of the discussion will be "How Can Industrial Arts Meet the Needs of All Secondary School Youths?"

THE FARMER'S WEEK

One of the events featured each year at Michigan State College, is called The Farmer's Week. This is one of the high points on the calendar and the 1954 Farmer's Week is scheduled for February 1 to 5 inclusive. The central theme of the exhibit this year is going to be a *do-it-yourself* type of educational program.

We are aiming a large part of both our exhibits and demonstrations at industrial-arts instructors and high school students who should find the program highly interesting and instructive.

There will be a full day discussion program which will cover the planning, equipping, and operating of a home or small industrial woodworking shop. In the afternoon the program will cover the field of wood finishes and wood finishing. Ample time will be provided at both discussion periods for audience participation in a question and answer period.

Additional high points of the exhibit and demonstration will be a wood preserving demonstration.

♦ Frank Di Giacomo, chairman, related technical department, The New York School of Printing, has been elected president of the Printing Teachers Guild of New York.

Other officers elected were George M. Halpern, New York State Technical Institute, vice-president; Louis W. Tana, Junior High School, secretary; and Joseph H. Quinn, Junior High School, treasurer.

♦ The Illinois Teacher Placement Association has adopted a Code of Ethics for placement officers. This instrument which has borrowed freely in its format from a similar statement from the Western Institutional Teacher Placement Association is designed to improve professional relations in the state of Illinois.

The code emphasizes such items as institutional relations, placement procedures, relations of placement officers with applicants and with employers. The brochure seeks to clarify the appropriate role of the various individuals who contribute to the making of a teaching contract.

Copies of the code may be obtained by writing to the president of the Illinois Teacher Placement Association, Dr. V. F. Dawald, director of teacher placement, Milliken University, Decatur, Ill., or to Dr. Martin H. Bartels, director of placement, Northern Illinois State Teachers College, DeKalb, Ill. — *Martin H. Bartels.*

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Starrett Hacksaws and Band Saws are made with the same high quality of materials and workmanship that have made Starrett Tools the choice of skilled craftsmen in every trade. The complete Starrett line includes hacksaws for cutting metals by hand or machine . . . and band saws for cutting metal, wood, plastics, etc. You make no mistake when you specify STARRETT.

FREE REFERENCE MATERIAL

Starrett Hacksaw and Band Saw Catalog and Starrett Cutting Guide give complete information on cutting any material by hacksaw or band saw. Free to instructors. Send for them. Address Dept. CE.

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THE L. S. STARRETT COMPANY, ATHOL, MASSACHUSETTS, U. S. A.

Here's what A-V experts say about the Pageant's exclusive pre-lubrication feature

"Over-oiling is one of the chief hazards in projector maintenance. It results in costly, tedious cleaning jobs and often damages film. Pageant users never have any such trouble because their projectors are *permanently* lubricated—there's never a need for service caused by over- or under-oiling."

A. R. Mickelson, *Director*
Audio-Visual Dept.
Epko Film Service
Fargo, North Dakota

"In spite of all we tell customers about how to oil projectors properly, too many of them never seem to do it right or at all. So it's a welcome relief to be able to offer Kodak's lifetime-lubricated Pageant."

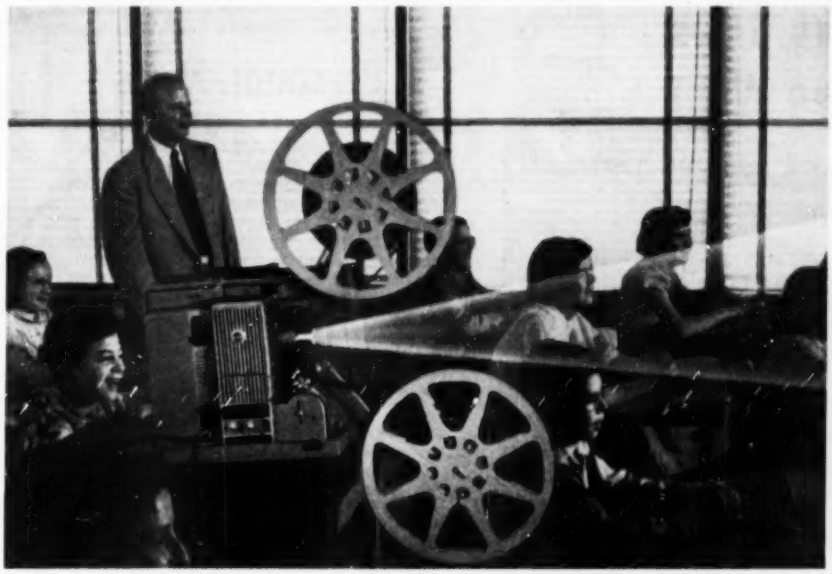
Paul M. King
Krum's Audio-Visual
Battle Creek, Michigan

"After 18 years' experience serving educational institutions with numerous service headaches resulting from under- or over-lubrication of motion-picture projectors, I, as well as my customers, welcome the Kodascope Pageant Projector's permanent pre-lubrication feature as an important contribution toward trouble-free operation."

R. G. Smith, Jr.
Audio-Visual Center
Augusta, Georgia

"No wonder the Kodascope Pageant Sound Projector is gaining popularity so fast. Its exclusive pre-lubrication feature completely eliminates the possibility of under- or over-oiling. For this reason the Pageant is ideal for training rooms that are used by a number of instructors, where servicing the projector is always left to the 'other fellow.'"

Wilson Gill
Wilson Gill, Inc.
Washington, D. C.



Super-brilliant new Pageant can banish *your* room-darkening problems

When unwanted light gets past drawn blinds or shades, movies wash out and lose their sparkle. Viewers strain, lose interest. But even under adverse conditions, the Kodascope Pageant Sound Projector, Model AV-071, screens pictures brilliantly. Its Plus-40 Shutter provides *40% more light* than standard shutters . . . gives crisp, super-bright pictures anywhere, any time.

Compact, Powerful

The AV-071 combines projector and well-baffled 8-inch speaker in a single, easy-to-carry case. Its true-rated 7-watt amplifier delivers plenty of power for normal sound needs. And a simple adjustment of the *exclusive sound-focus control* gives optimum sound from any film—regardless of the position or condition of the sound track.

A Pageant for Every 16mm. Need

The AV-071 is just one of six outstanding Pageant models. Here's how each of the other models is designed to help you solve a particular problem . . .

Model 1 is the economical top choice for all-around sound and silent showings. Has all the superior features of the AV-071, except the Plus-40 Shutter.

Model AV-151 has an extra-powerful 15-watt amplifier and matching 12-inch speaker to overcome sound difficulties in auditorium-size rooms.

Model AV-151-E combines added sound power with the extra brilliance of Kodak's remarkable Plus-40 Shutter.

Model AV-151-S has a powerful 15-watt amplifier and compact 8-inch speaker built into a single case.

Model AV-151-SE has a 15-watt amplifier for added power, the Plus-40 Shutter for extra brilliance, and an 8-inch speaker for compact portability.

Pageant prices start at a remarkably low $375 (subject to change without notice).

How your dealer can help you

Whether it's special lighting problems or difficult acoustical conditions you face, your Kodak Audio-Visual Dealer will be glad to help you select the Kodascope Pageant tailored to fit *your* movie-showing needs. See him soon for a free demonstration—or fill out the handy coupon below.

EASTMAN KODAK COMPANY, Dept. 8-V, Rochester 4, N. Y. 1-193

Please send name of nearest Kodak Audio-Visual Dealer and information on:
Kodascope Pageant Sound Projectors, Model 1 ☐ Model AV-071 ☐
Models AV-151 and AV-151-E ☐ Models AV-151-S and AV-151-SE ☐

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TITLE_____
ORGANIZATION_____
STREET_____
CITY_____ STATE_____
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7" - 2.00	9" - 2.45	12" - 4.35

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Made of SIMONDS STEEL fully guaranteed against any defect in material or workmanship.

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Factory Branches in Boston, Chicago, San Francisco, and Portland, Ore. Canadian Factory in Montreal, Que.

Personal News

♦ WELCOME E. WRIGHT was awarded the doctor of education degree in industrial-arts education at the Pennsylvania State College on August 8, 1953. His dissertation topic was "Experimental Determination of the Value of the Mirror as an Aid in Demonstrating Operations in Industrial Arts."

Dr. Wright has been on the industrial education staff at the Agricultural and Mechanical College of Texas since January, 1946. He received his B.S. degree from the East Texas State Teachers College and the M.S. degree from the Texas A & M College. His experience includes several years as a teacher of industrial arts in the high schools at White Oak and Longview, Tex., and four years as an experimental engineer at the Consolidated Vultee Aircraft Plant in Fort Worth.

♦ CHRIS H. GRONEMAN, head of the Industrial Education Department at The Agricultural and Mechanical College of Texas, was on the industrial education staff at Bradley University during the 1953 summer session as a guest professor.

♦ New employees added to the staff of the Industrial Education Department at the Agricultural and Mechanical College of Texas with the beginning of the 1953–54 school year were Messrs. Frank D. Nixson and Clint A. Bertrand. Both are graduates of the Texas A & M College. Mr. Nixson has served as assistant training director at the Bell Helicopter Aircraft Company in Fort Worth since his graduation, while Mr. Bertrand has had several years' successful experience in carpentry and cabinetmaking trades.

♦ ROD O'CONNOR of the Bellingham Public School system was a guest professor this past summer in the Woods and Metals areas of the industrial-arts department of Western Washington College of Education, Bellingham, Wash.

♦ STEWART VAN WINGERDON of the Campus School of Western Washington College of Education, Bellingham, Wash., was a guest professor in the industrial-arts department of the Western Washington College of Education this past summer. He taught in the areas of elementary-industrial arts and handicrafts.

♦ W. CARLISLE ANDERSON, who is working for his doctoral degree under Dr. Homer J. Smith at the University of Minnesota, taught graphic arts and general shop during the first term of the 1953 summer school session at Western Washington College of Education, Bellingham, Wash., and graphic arts and shop maintenance during the second term.

♦ DR. EDWARD K. HANKIN, formerly associate professor of education in the vocational teacher education department of the University of Pennsylvania has joined the faculty of Florida State University at Tallahassee, Fla., as professor of education and head of trade and industrial education.

♦ LAWRENCE B. HOYT, a Stout graduate, has been named president of the Wausau Rotary Club. He is the Vocational School Director in Wausau, Wis.

♦ RICHARD L. GANDT, former industrial-arts teacher at Cleveland High School, St. Louis, Mo., has been appointed to the faculty of the University of Illinois, Urbana, Ill.

♦ DON W. NANTZ is teaching in the vocational-industrial and technical education department in Western Michigan State College in Kalamazoo, Mich. He is a graduate of The Stout Institute, Menomonie, Wis., and has studied at Bradley University.

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♦ JOHN KUULA is teaching woodwork, mechanical drawing, and driver education at Mossyrock, Wash.

♦ CHARLES E. KENNEDY, for the past ten years director of the Department of Printing and Publishing, and dean of men of West Virginia Institute of Technology, Montgomery, W. Va., has been appointed executive director of the Southern School of Printing, Nashville, Tenn., and secretary, Southern Graphic Arts Association.

♦ DR. WALTER R. WILLIAMS, JR., formerly professor of education, and head of the department of industrial arts and vocational education at the University of Florida, Gainesville, Fla., has been made Florida state director of vocational education.

In his new position, Dr. Williams will be responsible for the administration, co-ordination, supervision, and promotion of vocational education in Florida.

♦ The promotions of eight members of the faculty at Stevens Institute of Technology, Hoboken, N. J., will take effect at the beginning of the academic year in September.

Three of the promotions have been to professorships from the rank of associate professor. Those who were thus advanced are: Richard D. Humphrey, professor of humanities; Arthur Lesser, Jr., who becomes Alexander Crombie Humphreys professor of industrial engineering; and Carl Neitzert, professor of electrical engineering.

Promoted from the post of assistant professor to associate professor in their respective departments were: Adam Abruzzi, industrial engineering; Reuben Benumof, physics; and Edward Peskin, electrical engineering.

Two men were named assistant professors. They are James J. Lawlor, machine design; and John E. Nankivell, physics. Both had formerly held the rank of instructor.

♦ ROBERT M. WORTHINGTON, who received his master of arts degree from the University of Minnesota, Minneapolis, Minn., in June, 1949, has been teaching in the machine tool laboratory at Purdue University, Lafayette, Ind., during the past school year.

From September, 1949, to June, 1952, Mr. Worthington taught machine shop at Johnson High School, St. Paul, Minn.

♦ WILLIAM HINTERTHEUER is on the staff of the Institute of Paper Chemistry in Appleton, Wis.

♦ Three Illinois Institute of Technology faculty members have been elected officers of the Illinois-Indiana section of the American Society for Engineering Education.

Dr. Ralph G. Owens, dean of engineering, has been named chairman. Ivan L. Hill, associate professor of technical drawing, was elected secretary-treasurer; and Frank W. Edwards, director of the department of civil engineering, was appointed representative to the ASEE general council.

The election of officers took place at the recent 16th annual meeting of the society at Rose Polytechnic Institute, Terre Haute, Ind.

♦ DR. EDWIN GAYLORD WARNER, 86, retired professor at the Polytechnic Institute of Brooklyn, N. Y., died recently.

Born in Wisconsin, Dr. Warner came East for his education. In 1885 he was graduated from Amherst College, later obtaining a Ph.D. from New York University.

Surviving are his second wife, Mrs. Margaret D. Warner, three sons and a daughter.

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News Notes

♦ The accompanying illustration shows a group of graduate students in attendance at Bradley University during the 1953 summer session.

There are 22 states represented, two students from Canada and two students from Hawaii. There are 41 doctoral candidates and 43 master's degree candidates.

A breakdown of the students by states is as follows: Illinois, 37, Iowa, 5, Wisconsin, 4, Missouri, 4, Minnesota, 3, Ohio, 3, Oklahoma, 3, Michigan, 3, Alabama, 3, Georgia, 2, Louisiana, 2, West Virginia, 2, Mississippi, 1, Arizona, 1, Idaho, 1, Pennsylvania, 1, South Carolina, 1, Texas, 1, Nebraska, 1, Connecticut, 1, Maryland, 1, Florida, 1.

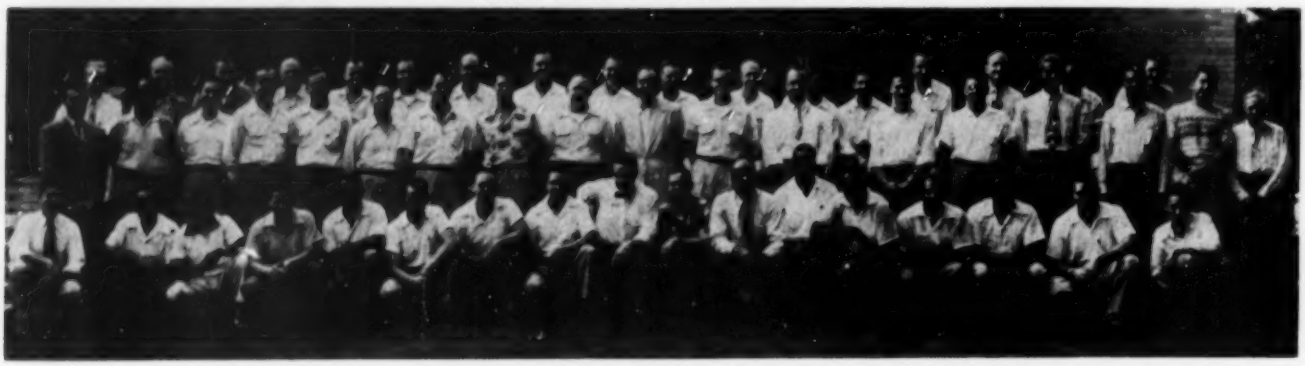
♦ A new industrial-arts bulletin, "Suggested Courses of Instruction in Industrial Arts for the Junior High School Level," was published by the California State Department of Education during the month of November. This publication contains courses of instruction in the following six areas of industrial arts: drawing, general wood, general metal, electricity, handicrafts, and graphic arts. Also included in the bulletin are two sections devoted to the comprehensive general shop.

The California Industrial Arts Curriculum Committee, responsible for developing these courses of instruction, is composed of Kermit A Seefeld (committee chairman), Dale Easter, J. Lyman Goldsmith, John M. Groebli, Claude E. Nihart, Kenneth Phillips, William B. Steinberg, David O. Taxis, Glenn D. Warrick, and Robert L. Woodward (committee consultant).

Requests for this bulletin should be addressed to Bureau of Textbooks and Publications, California State Department of Education, Sacramento. Price, fifty cents per copy.

♦ A new page in the history of transportation is being written on the drawing boards and in

(Continued on page 24A)



Bradley University — Bennett College Industrial Education Graduate Club, July 15, 1953

Front row: Luff; Parrish; Dominique; Zimmerman; Edwards; Biggam; Pederson; Simpson; Priebe; Theisen; Trammell; Logkman; Galloway; Dowd; Teague; Highes. Middle row: Wright; Timmons; Barber; Grigg; Jacobsen; Hart; Press; Rambow; Paige; Byars; Rutherford; Harrington; Polak; Marks; Cain; Swanson; Lynch; Dean Dace. Back row: Perry; Patterson; Conaway; Brown; Ursin; Nantz; Rendall;; Krause; Thompsen; Moltman; Blakeway; Bearden; Erwin; Sujdak; Gonser; Harrison; Buhr

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NEWS NOTES

(Continued from page 22A)

the research laboratories of the Goodyear Tire & Rubber Co. at Akron, Ohio.

Passenger conveyor belts are no longer a dream. They are a reality because of intensive engineering studies carried on for five years by Goodyear and Stephens-Adamson Manufacturing Co.

Col. S. H. Bingham, general manager of New York's vast transit system, is originator of the idea for the conveyor subway.

Contract to build the world's first passenger conveyor belt system, a 227-foot Speedwalk, has been awarded to Goodyear and Stephens-Adamson by the Hudson and Manhattan Railroad Company.

Under consideration also are passenger belt systems for race tracks, ball parks, football stadiums, and other places where the continuous flow principle of conveyor belts can solve congestion problems.

♦ An aviation workshop for elementary teachers in western Michigan was held on Saturday morning, November 21, at Western Michigan College.

High light of the day was the visit of an H-19 Sikorsky helicopter, capable of carrying ten passengers, which flew to Kalamazoo from Selfridge Air Force Base, Mt. Clemens, and landed in Waldo Stadium. It then staged a demonstration of air-sea rescue techniques and showed other capabilities of the craft.

The rest of the morning was occupied with a panel discussion on air-age education. Participants were Dr. J. W. Giachino and Norman Russell of the vocational-industrial education department at Western; Roy Williams, Civil Aeronautics Administration, Grand Rapids; James Mellus, manager of the Kalamazoo airport; and Victor E. Moore, assistant director, air world education and manager of school services, Trans World Airlines, New York City.

Group meetings on "Aviation Activities in the Elementary Schools" were held after lunch.

♦ Volume 1, No. 2, of *Notes from Abrasive Tech*, which is Behr-Manning's sales-engineering training course, is a small four pager which has

(Continued on page 26A)

Committee developing an industrial-arts teaching guide to be published by the Texas Education Agency

Left to right, back row: C. A. Carroll, principal, Crane High School; Rogers L. Barton, industrial-arts consultant, Texas Education Agency; W. R. Cate, chief of vocational education, Texas Education Agency; Sam Martin, director of industrial arts, Austin Public Schools; John Page, industrial-arts teacher, Yoakum; Dr. Eo le B anton, associate professor of industrial arts, North Texas State College; C. P. Munz, industrial arts tea her, Alvin; Alvin I. Thomas, director of industrial education, Prairie View A. & M. College; Hilton Lytle, director of industrial arts, Texas School for the Deaf, Austin; Ralph Vernon, instructor of industrial arts, Texas A. & M. College; John Cherry, director of industrial arts, Fort Worth Public Schools; Parks Windham, director of industrial arts, Houston Public Schools

Left to right, front row: Dr. Victor Bowers, head, industrial arts department, Southwest Texas State Teachers College; C. H. Connally, associate professor of industrial education, East Texas State Teachers College; Frank Mooney, industrial-arts teacher, San Antonio; Jack Donnell, evening school supervisor, Pasadena Public Schools; Anton Savcik, industrial-arts teacher, El Campo Public Schools; W. A. Mayfield, industrial-arts teacher, Snyder Public Schools; M. A. Storey, superintendent of schools, Port Isabel; Terrell Newberry, industrial-arts teacher, South Park Schools, Beaumont; E. C. Pollard, co-ordinator of industrial education, Orange Public Schools; J. B. Snodgrass, professor of industrial arts, Sam Houston State Teachers College; and Virginia Nichols, secretary.

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NEWS NOTES

(Continued from page 24A)

just been delivered to its readers. It contains information useful to teachers who use abrasives in their shops.

To be placed on the mailing list, write to *Behr-Manning, Troy, N. Y.*

♦ During the week of March 14 to 20, 1954, Camp Fire Girls throughout the nation will observe their organization's 44th birthday. More than 370,000 Camp Fire Girls, their families and some three million Camp Fire "alumnae" will join in the national celebration.

For further information write to *Camp Fire Girls, Inc., 16 East 48th St., New York 17, N. Y.*

New Publications

General Printing

By Glen U. Cleeton and Charles W. Pitkin. Cloth, 195 pp., 8 by 10½ in., illus., $3. McKnight & McKnight Publishing Co., Bloomington, Ill.

A text that contains both the history of printing and instructions for the student who wants to learn the science and art of printing.

The book is copiously illustrated and contains 120 units acquainting the student with the basic methods of printing, the point system, type and spacing material, the composing stick, how to set straight matter, how to tie up a form, how to ink the form and pull a proof, how to read and mark proof and make corrections, and how to distribute type.

Then he learns how to use the slug cutter and cut miters, position furniture, eliminate spring in forms, put on packing, ink up the platen press, put on the chase, position the guides, make-ready, feed the press, then wash it up and care for the rollers.

How to make up pages, set a rule form, classify types, use display, choose a type face, copyfit, are explained next.

Type and typecasting machines are then commented on, as well as the newer methods of offset and gravure.

The making of stereotypes, electrotypes, platemaking for relief printing, for gravure, for offset also is explained.

Then papermaking and printing ink making is explained, and the arithmetic entering into the specifying and estimating of printing is thoroughly discussed.

Farmer's Shop Book

By Louis M. Roehl and A. D. Longhouse. Cloth, 452 pp., 6⅜ by 9½ in., illus., $3.88. The Bruce Publishing Co., 400 N. Broadway, Milwaukee 1, Wis.

This is a thoroughly revised and enlarged edition of this well-known text for use in vocational-agricultural classes. The book is also an excellent reference book for the farm worker or farm owner who wants to learn how to do his work more efficiently.

Its chapters discuss how to grind the tools, knives, etc., used on the farm; fitting saws and farm-tool handles; how to work cold metal and how to do forging and soldering, carpentry and woodworking, ropework; electrical work also is clearly explained.

There also is a chapter on the planning and equipping of a community repair shop, and the chapter on woodworking contains detail drawings of many items that will be found useful on the farm.

Selecting an Occupation

By Charles A. Prosser and Calvin S. Sifferd. Cloth, 246 pp., 6¼ by 9¼ in., $2.50. McKnight & McKnight Publishing Co., Bloomington, Ill.

A very helpful text which assists teachers to prepare their students to arrive at an answer to the most difficult question that confronts youth — what occupation shall I choose?

It is not a revision of Prosser's earlier book, but rather a new book based on the old.

It discusses present-day employment trends; professional and semiprofessional occupations; clerical, sales, service, agricultural, trades and industry, and public service occupations.

It also lists the occupations found in major manufacturing and nonmanufacturing industries.

Then it gives excellent directions for analyzing the individual's physical and mental fitness for entering a given occupation, and of meeting the educational and personality requirements.

The authors also have provided four excellent chapters on obtaining the job, holding the job and looking ahead, studying and reading better, and learning how to write well.

A list of 2000 commonly used words is appended.

Jewelry & Enameling

By Greta Pack. Cloth, 371 pp., 5¾ by 8⅛ in., illus. D. Van Nostrand Co. Inc., New York, N. Y.

This is the second edition of this interesting work manual for instructors and students who want to learn how to make jewelry and do enameling.

Chapter 1 introduces the beginner to tool processes and materials, and the development of an idea into a design which must be worked out.

Chapter 2 shows how annealing, pickling, filing, sawing, piercing, hard and soft soldering, metal casting, cleaning, polishing, and coloring are done.

Chapter 3 explains how to do chasing, repoussé,

(Continued on page 29A)

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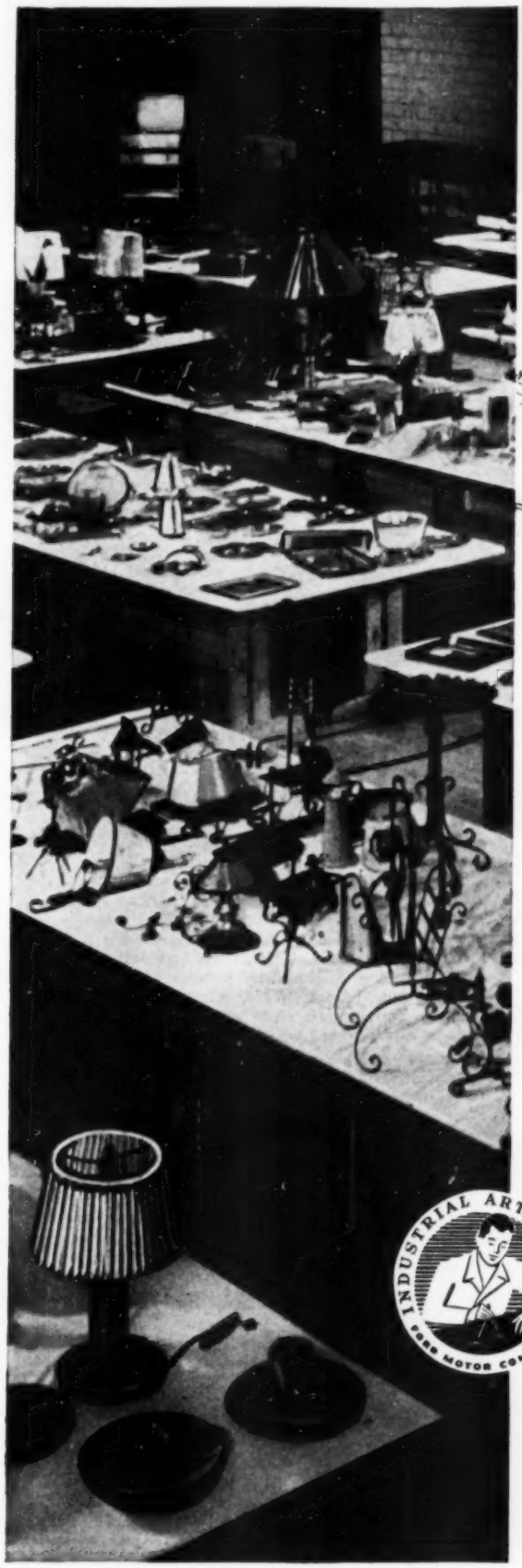

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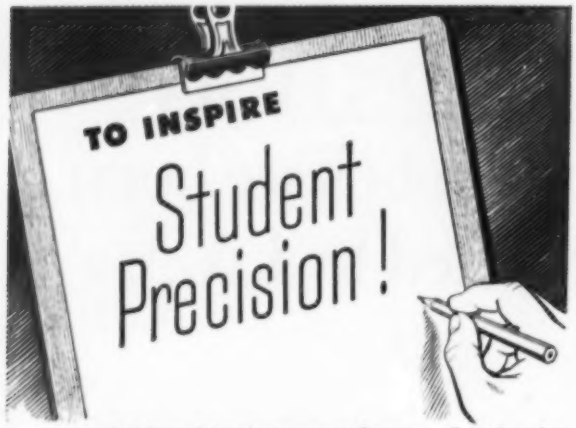

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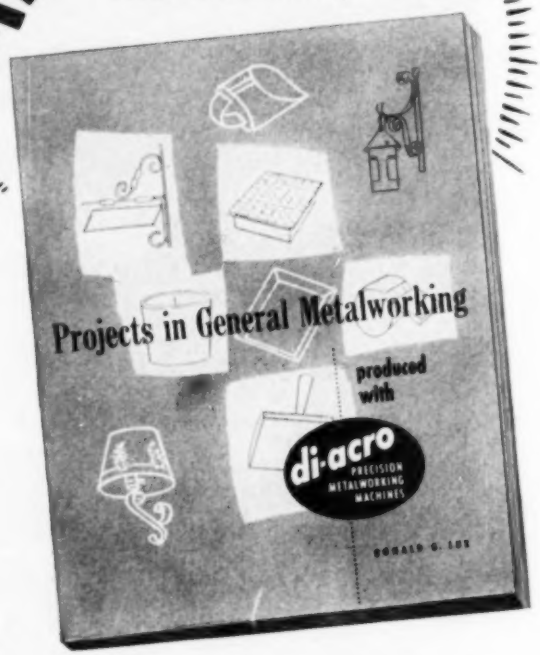

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NEW PUBLICATIONS

(Continued from page 26A)

modeling, carving, wire drawing, tube drawing, wire twisting, and wire coiling. Also how to make domes, balls, and stamped forms. Then enameling and stone setting is explained.

Chapter 4 describes the methods used in making finger rings, brooches, clips, bracelets, chains, clasps, and beads.

The book also contains a list of sources of supplies and shows a layout of a workshop.

A glossary and bibliography also are appended.

Teaching Successfully the Industrial Arts and Vocational Subjects

By G. Harold Silvius and Estell H. Curry. Cloth, 339 pp., 6¾ by 9¼ in., illus., $4.50. McKnight & McKnight Publishing Co., Bloomington, Ill.

An excellent text for institutions preparing industrial arts and vocational education teachers.

Part One discusses most helpfully how the teacher can secure the students' personal and health information, keep records, give demonstrations, make assignments, and control absences and tardiness.

Part Two describes how the instructor can plan his own and the students' work, and how to make and use teaching aids and devices.

Part Three presents many effective teaching methods and techniques.

Part Four is devoted to the safety program, and Part Five to the selection and use of printed material.

Automotive Fuel and Ignition Systems

By Irving Frazee and Earl L. Bedell. Cloth 503 pp., 5¾ by 8½ in., illus., $5.60. American Technical Society, Chicago, Ill.

A very complete book which aims to develop artisans who are self-reliant and not dependent solely on manufacturers' service manuals.

The book explains the function of the fuel system, the ignition system with its battery and magneto; and the techniques of trouble shooting to determine the cause of failure of the engine to operate properly.

In the eleven chapters are discussed the gasoline fuel system, fuel pumps, carburetors, engine governors, fuel-system trouble shooting, Diesel engine troubles, fundamentals of electricity, ignition systems, magnetos, gasoline engine trouble shooting, and engine tests and adjustments.

How to Become a Better Reader

By Paul Witty. Cloth, 304 pp., 7⅛ by 10 in., $4.16; paper cover, $3.08. Science Research Associates, 57 W. Grand Ave., Chicago 10, Ill.

A very interseting and helpful book. It may be used for individual or group reading improvement.

It contains 20 reading selections, 20 instructive lessons, and 20 objective tests for determining the speed, comprehension, and vocabulary of the person or persons who want to improve their reading ability by means of the methods laid down in this book.

Science Facilities for Secondary Schools

By Philip G. Johnson and a committee of the National Science Teachers Association. Office of Education Miscellany No. 17. 38 pp. 25 cents. 1952. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

This publication has been prepared to give help in planning space and other instructional facilities for science in secondary schools. The stress is on general principles that govern the selection and arrangement of facilities. The book contains numerous photographs and floor plans. A check list and an extensive bibliography are included.

American Trade Schools Directory, 1953

Compiled by Ulrich H. E. Croner. Paper, 105 pp., 5½ by 8½ in., $3.75. Croner Publications, Queens Village, N. Y.

This directory of trade schools in the United States will be useful to student counselors in high schools, information officers in public libraries, training advisers of the Veterans Administration, and other public and private institutions called upon to give vocational guidance.

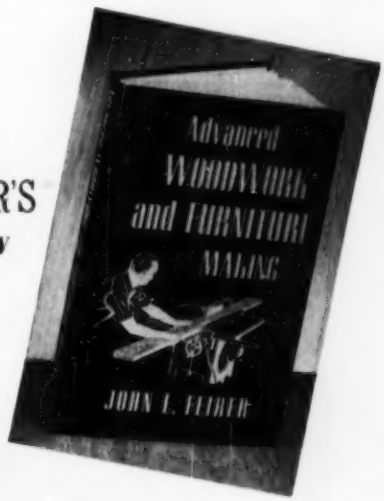
The book lists some 2000 schools in two ways: In Part I they are classified by trades taught; In Part II they are listed by states and cities. More than 150 subjects appear in Part I covering a great variety of trades, such as: airline hostess, auto mechanics, beauty culture, building trades, commercial art, drafting, dressmaking, electric trades, horticulture, interior decorating, marine engineering, massage, medical assistants, practical nursing, modeling, photography, printing, radio and television, refrigeration, sewing, tool and die making, upholstering, watchmaking, welding, and many more.

In addition to these specialized headings there is a heading "Trade and Industrial Training," listing schools where all the major trade subjects are taught. Another heading, "Correspondence Courses," covers schools that offer home study courses.

Announcing

JOHN L. FEIRER'S

sensational NEW textbook for the senior high school level . . .



ADVANCED WOODWORK AND FURNITURE MAKING

Already Texas State Adopted

Rarely does a new teaching aid answer teachers' long-standing needs so well as this great machine woodworking textbook. John L. Feirer, whose Industrial Arts Woodworking was the first new junior high school textbook in 20 years, has done it again — this time at the senior high teaching level.

ADVANCED WOODWORK AND FURNITURE MAKING was written to coincide teaching with the two significant changes in the area of woodworking — the great new popularity of small-sized power tools for the home craftsman . . . and of the MODERN furniture styles which can be reproduced with them.

A TRULY GREAT BOOK

It's practical, clear and thorough in discussing and demonstrating problem solutions — designing . . . planning . . . safety . . . care and use of machine and hand tools . . . rules and procedures for superior craftsmanship. Contains over 300 clear, big and up-to-date photos . . . 400 fact-filled pages.

Unequalled for use in organized instruction. Organized logically and systematically on a step-by-step basis. Answers the greatest number of questions on "how-to-do-it" and "what-to-make." Contains hundreds of ideas.

SIX MAIN SECTIONS

SECTION I — how to select, design and plan furniture . . . design, types of furniture construction, lumber and plywood and how to make and read a drawing. SECTION II — starting machine woodworking . . . measuring, transferring a design and getting out and gluing up stock. SECTION III — special problems such as constructing joints, hanging a door, panel construction, and many others. SECTION IV — woodfinishing. SECTION V — thorough coverage of all the important common power tools (200 pages) . . . SAFETY stressed throughout. SECTION VI — project section with main emphasis on developing the student's OWN IDEAS.

You must see this book to appreciate its great value. Send for FREE EXAMINATION by encircling Book No. 1 in coupon. $3.96

INDUSTRIAL ARTS WOODWORKING — John L. Feirer

This is the junior high school woodworking textbook that's sweeping the country with adoptions and endorsements. Covers every procedure, step-by-step, from selecting the rough stock to finishing the project. Divided into 4 major parts for easy use — fundamental processes in hand woodworking, important machine tools, related information about wood, and carefully selected projects. 478 diagrams and photos . . . 520 questions. Book No. 2 in coupon $2.88

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This book, long a leader and practically unchallenged in its field, is currently undergoing a complete revision. It will retain the author's soundness of method and detail that has made it such a favorite with teacher and student alike. By William W. Klenke. Circle Book No. 3 in coupon to reserve a copy for FREE EXAMINATION.

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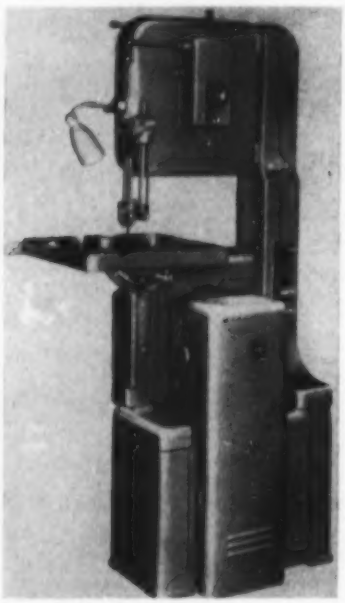
SHOP EQUIPMENT NEWS

WALKER-TURNER VARIABLE SPEED BAND SAW

A new Variable Speed Band Saw having a speed range from 50 to 4500 surface feet per minute has been announced.

The speed change is effected through a hand wheel operating a variable diameter pulley which is connected to the saw wheel through a gear train. A gear shift lever having two positions controls the high or low speed range. The low range operates at 50 to 450 s.f.m., and the high range at 500 to 4500 s.f.m. Speed changes are made while the machine is running.



Variable Speed Band Saw

This machine can be used on all types of ferrous and nonferrous metals, plastics, wood, and composition.

The capacity under the guide is 8 in., and from blade to frame 16 in. Table tilts 45 deg. to the right and 5 deg. to the left. Motor is spring mounted in base. Motor recommendations are ¾ h.p., 1140 r.p.m.

Other features include new guides that support blade at point of contact and the machine features Carter Quick Change Tires.

Further information and literature may be obtained from the *Walker-Turner Division, Kearney & Trecker Corp., Plainfield, N. J.*

(For Convenience Circle Index Code 0101)

IMPROVED MAYLINE ART TABLE

The Mayline C-7702 Classroom Art Table now comes equipped with a solid basswood top having metal edges. These edges are applied to both the 20 by 24½-in. drawing section and the 20 by 10-in. reference top. Protection of drawing edges and greater ease in the use of a T Square is assured. Drawing top can be raised through a range of 50 deg.

Small items such as triangles, pencils, brushes, paints, erasers, and similar objects are held in place on the drawing board by a hardwood ledge strip. These items can also be stored in the handy tool drawer at the right-hand side of the table when not in immediate use.

Improved Mayline Art Table

The table is built of oak, and the finish is golden oak.

For further details write *Mayline Company Inc., Sheboygan, Wis.*

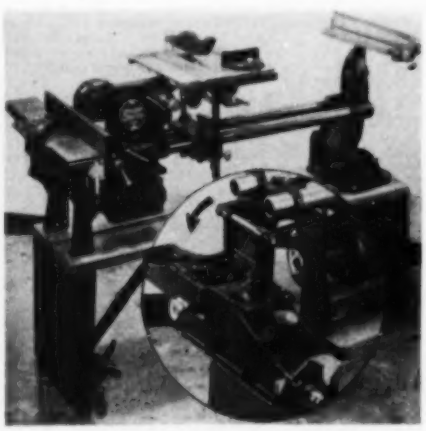
(For Convenience Circle Index Code 0102)

SHOPSMITH ANNOUNCES AN ADVANCED MODEL

New accessories and features are announced by Magna Engineering Corporation, consisting of a new 4-in. precision jointer with 28-in. table; a universal hold-down accessory; and hard-chrome rust-proofing of all tubular ways and table rods.

The new Shopsmith jointer has a full 4-in. capacity, is not an attachment as it becomes a permanent, integral part of Shopsmith when installed with the special mounting kit.

The new precision jointer has a 5½ by 13¼-in. infeed, and a 4½ by 13¼-in. outfeed table. The cast-iron fence is husky and extra long. It tilts from minus 45 deg. to plus 45 deg., with adjustable auto stops at the most used positions. The safety guard has self-contained spring adjustment insuring adequate tension for all stock widths; it can be mounted on outfeed table during rabbeting operations to cover the part of the cutterhead behind the fence.



Magna's New Jointer for Shopsmith

The new universal hold down consists of a set of interlocking components easily made up into various combinations to function on the miter gauge, the rip fence, and the new shaper fence.

For more specific information about these new improvements and additions to the original Shopsmith, write to *Magna Engineering Corp., Menlo Park, Calif.*

(For Convenience Circle Index Code 0103)

THE NEW WILTON AIR-HYDRAULIC VISES

The Wilton Tool Manufacturing Company has just announced the development of a complete line of power operated vises under the trade mark "WiltOmatic."

The new Wilton Air-Hydraulic Vise

The greatest contribution to the advancement of power operated vises is the use of the conventional vise screw and handle for presetting the jaw opening to the size of the work piece. The power unit, which is attached to a conventional Wilton Vise, has an adjustable power stroke from zero to ¾ in. Maximum jaw opening varies from 3 to 9 in., depending on size of vise. The power stroke is activated by either a foot or hand control.

Relatively low air pressure from plant outlets is used to actuate an air-hydraulic converter. This in turn gives the vise a powerful locking force at the touch of a finger. With a power stroke of controlled length and the ease of presetting the jaw opening, the WiltOmatic will satisfy all safety regulations.

For further information address *Wilton Tool Mfg. Co., 925-941 Wrightwood Ave., Chicago 14, Ill.*

(For Convenience Circle Index Code 0104)

(Continued on page 32A)

EVERYTHING IN PLASTICS for the school

BIG NEW FRYCO PLASTICS MANUAL CATALOG

PLASTICS FACTS FOR THE TEACHER

Over 100 pages jam-packed with complete up-to-date plastics facts. The latest data on all types of plastics. Includes such popular materials as Lucite, Plexiglas, Acetates, Nylon, Polyplastex, Styrofoam, Cements, Dyes, Internal carving supplies, Coatings and many, many others. Complete with detailed instructions on sawing, cementing, carving, casting, etc.

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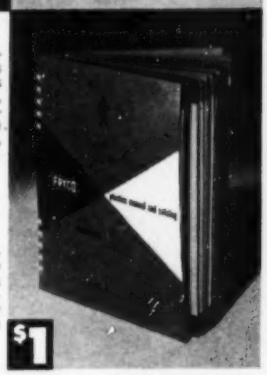

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JF-6	Screw Eye—threaded eyelet—silver or gold color.	1.45	1.28	1.19
JF-27	Metal Pin Back—⅛" holes. Safety catch.	2.45	2.18	2.03

CLARO-CAST TRANSPARENT LIQUID PLASTIC

For glasslike, crystal clear castings Claro-Cast offers unlimited possibilities—for casting novelties, model parts and special forms, for preserving specimens, etc. Easy to use. May be machined with ease. Does not soften after cured.

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Thickness	Up to 23 Sq. Ft.	24-149 Sq. Ft.	150 Sq. Ft. & Up
1/16"	$1.18 Sq. Ft.	$1.05 Sq. Ft.	$1.00 Sq. Ft.
1/8"	1.53	1.36	1.30
1/4"	2.21	1.98	1.88

Stock sizes: 12x12", 12x48", 24x36", 24x60", 36x60" Thicknesses and stock sizes may be asserted for quantity discounts. More sizes and thicknesses in our catalog.

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If you have a good lathe in your shop, a few Boice-Crane spinning tools and accessories permit the instruction of metal spinning. If you have no lathe, Boice-Crane can supply a gap-bed lathe as well as the spinning tools. In any event, you should send for Boice-Crane's FREE instruction book on Metal Spinning.

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DUAL WET GRINDSTONE

Any student can operate without the slightest danger of drawing the temper of costly shop edge tools, as so frequently happens with high speed dry grinders. Consists of two complete grinder units, one coarse standard Ohio sandstone wheel, and one high quality extra fine grain Arkansas-type wheel, driven by a single double shaft motor.

Constant speed. Positive, spring-loaded friction drive automatically speeds up the stone as stone wear occurs through use. The only grinder which by maintaining near-constant peripheral speed, guarantees the last grind on the stone to be as efficient as the first.

Grinds wet, but operator stays dry. Don't compare "Friction-Matic" with wet grindstones that throw water. Rubber friction roll drive automatically squeegees excess water from the wheel.

Comes complete with two grinding units, bench base, V-belts, V-pulleys and double end shaft ⅓ H.P. motor for 110-V, 60 cy., 1 phase, A.C. Shipping weight 90 lbs. Six other single unit models.

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Originators and Pioneer Manufacturers of Oilstone Tool Grinders

SHOP EQUIPMENT NEWS

(Continued from page 30A)

PARENT METAL PRODUCTS DRAWING TABLE

A new drawing table has been added to the industrial arts and vocational shop equipment line of Parent Metal Products. This new No. 36–28 Drawing Table features complete adaptability to individual storage requirements.

Parent No. 36–28 Drawing Table with Board Storage Cabinet and Drawer Tier

The basic table consists of an all-steel base, 39 in. high, with a 36 by 28-in. drawing board, reinforced with 1¾-in. maple end battens. Integral adjustment bars in rear legs of base permit board to be raised to a 30-deg. angle. Basic unit is equipped with one storage drawer with lock, 6¼ in. wide, 13¼ in. deep, and 3½ in. high.

If maximum storage facilities are desirable, additional storage units — drawing board storage cabinet and drawer unit — can be added to the basic table. Board storage cabinet has space for six 18- by 24-in. boards. Drawer unit contains six individual storage drawers with locks, each 6¼ in. wide, 13¼ in. deep, and 3½ in. high.

For further information and prices write to *Parent Metal Products, Inc., Fourth & Locust Sts., Philadelphia 6, Pa.*

(For Convenience Circle Index Code 0105)

HARGRAVE MITER-FRAME CLAMP NO. 780

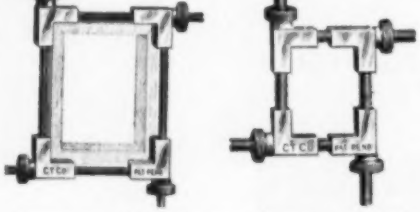
This Hargrave four corner miter clamp clamps all four corners at one time and does not mar the work. Can be used on finished stock. Exceedingly flexible as to capacity. Quickly adjusted to any square or rectangle within its maximum opening.

Corner blocks are aluminum alloy, light but strong. Screws are made from a good grade of steel ¼ in. in dia. Adjusting nuts are steel. They can be quickly twirled to position and are shaped to give a good grip for tightening.

This tool is made in four sizes — 8-, 12-, 18-, and 24-in. maximum openings. The minimum opening for all sizes is 2 in.

For further information write to *The Cincinnati Tool Co., Waverly at Main, Cincinnati 12, Ohio.*

(For Convenience Circle Index Code 0106)



Hargrave Miter-Frame Clamp No. 780

CHANGE OFFICIAL NAME

Mayline Company, Inc., is now the official name of the former Engineering Manufacturing Company of Sheboygan, Wis. Change in the corporate name has been approved by the state of Wisconsin. The drafting and art furniture and equipment produced by the company has been identified for the past three years with the trade name "Mayline."

Mayline Company, Inc., Sheboygan, Wis.

NEW "JORGENSEN" HINGED CLAMPS

A new idea in the field of clamping *jigs* is now on the market, known as "Jorgensen" Hinged Clamps. They are *deep reach* bar clamps, provided with a hinge plate on the foot end by means of which the clamps can be mounted onto any flat surface; the hinge-action permits the clamps to be positioned either in clamping position, or out of the way but ready for instant use on the job.

New Jorgensen Pony Clamp Design

For production work, one or more clamps, mounted as required, will make a fast-acting clamping jig for any kind of fabrication or assembly. A single clamp, mounted underneath a bench top or saw horse, hangs down out of the way when not in use — but is available for instant service whenever wanted to clamp work onto the bench top. There is no lost time putting down or picking up loose clamps.

Positive final screw pressure provides for ample take-up, as compared to toggle or cam-action devices. Extra hinge plates are available for permanent mounting where desired, so that an extra set may be carried in a tool kit.

Four designs are available, providing for a *reach* of from 2 to 5 in., and opening capacities of from 6 to 30 in.

Complete details are available from the manufacturers, *Adjustable Clamp Company, 424 N. Ashland Ave., Chicago 22, Ill.*

(For Convenience Circle Index Code 0107)

LOGAN 12-IN. LATHE WITH VARIABLE SPEED DRIVE

On all models of this new 12-in. lathe line, Logan Engineering Company now offers the buyer a choice between the standard Logan Double V-Belt Drive and a new Variable Speed Transmission. The lathe price remains the same no matter which drive is selected.

Specially developed for the Logan 12-in. lathe, the Logan Variable Speed Drive permits a spindle speed range of 38 to 295 r.p.m. when in back

(Continued on page 34A)

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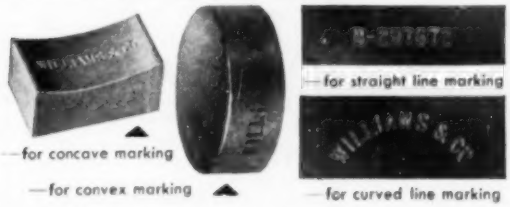

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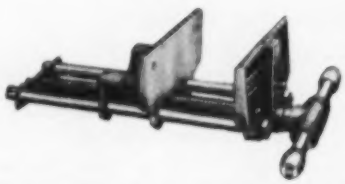

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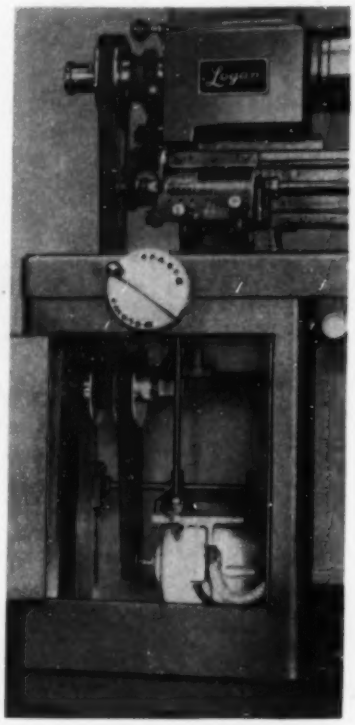
SHOP EQUIPMENT NEWS

(Continued from page 32A)



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EQUIPMENT LITERATURE

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The recent issue of *Saw Tips* mentioned describes how to use the DeWalt radial arm machine in making an angle dado, parallel dado, ploughing (straight, center, and bevel), fluting, rabbet (straight, bevel), mortising and blind mortising, double-tennoning, and radius cutting.

For your copies of *Saw Tips* write to *DeWalt, Inc., Lancaster, Pa.*

(For Convenience Circle Index Code 0109)

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A new arts and crafts catalog was recently issued by the American Handicrafts Company.

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(Continued on page 36A)

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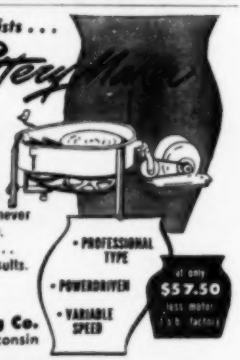

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EQUIPMENT LITERATURE

(Continued from page 34A)

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The new catalog celebrates American Handicrafts 21st year in the field, and also announces the opening of its new Fort Worth, Tex., location. The East Orange, N. J., main office and warehouse have been moved to Hoboken, N. J. Both locations have been streamlined to give faster than ever mail order service to customers.

The new catalog is free! For your copy write to *American Handicrafts, 300 Throckmorten St., Fort Worth, Texas,* or to *300 Observer Highway, Hoboken, N. J.*

(For Convenience Circle Index Code 0110)

MASTER INDEX OF SUPREME PUBLICATIONS

Supreme Publications recently published a Master Index to all Supreme Publications manuals. This index covers the material in all 13 radio manuals, all 7 TV volumes, and the UHF book. With the aid of this index, needed material can be quickly and easily located in the Supreme service manuals.

Readers of *Industrial Arts and Vocational Education* may obtain a copy of the Master Index free by mentioning this magazine and sending four cents for postage to *Supreme Publications, 3727 West 13th St., Chicago 23, Ill.*

(For Convenience Circle Index Code 0111)

UTICA DROP FORGE RELEASES SOUND FILM ON HISTORY OF FORGING

"5000 Years of Forging," a 20-minute, 16mm., black and white, sound film, has just been completed by Utica Drop Forge & Tool Corp., and is now ready for distribution to industrial and trade associations, schools and educational groups, civic groups, churches, clubs, etc.

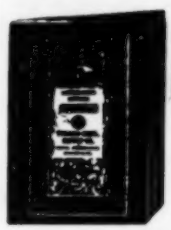
The film deals with the history and the mechanical progress of forging from its inception by primitive man 5000 years ago, to today's modern methods. Compilation of data and subject material required many months of research and involved such sources as the Craft Shops of Kenneth Lynch & Son of Wilton, Conn.; The J. Woodman Higgins Armory at Worcester, Mass.; the Village Blacksmith Shop of the recreated Village Crossroads at the Farmer's Museum in Cooperstown, N. Y. Other scenes show the manufacture of drop forged wrenches at the Utica plant where the latest methods apply pressure up to 1600 tons to forge parts to tolerances of a few thousands of an inch.

With the exception of nominal shipping charges, copies of the film are available free to organizations listed above as well as for TV presentations.

Requests should be directed to *Henry J. Zellweger, Advertising Manager, Utica Drop Forge & Tool Corp., Utica 4, N. Y.*

(For Convenience Circle Index Code 0112)

Today's typical railroad tank car can carry about 8500 gallons of oil, although some may carry up to 16,000 gallons. Oil travels by rail, pipe line, truck, ship and barge as it journeys to fulfill its myriad jobs for Americans. — *Petroleum Newsnotes.*



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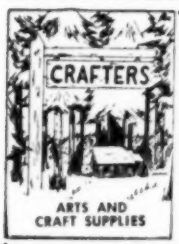

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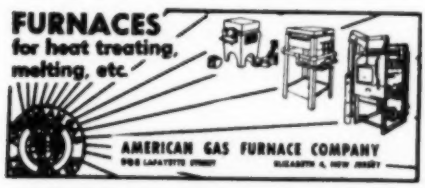

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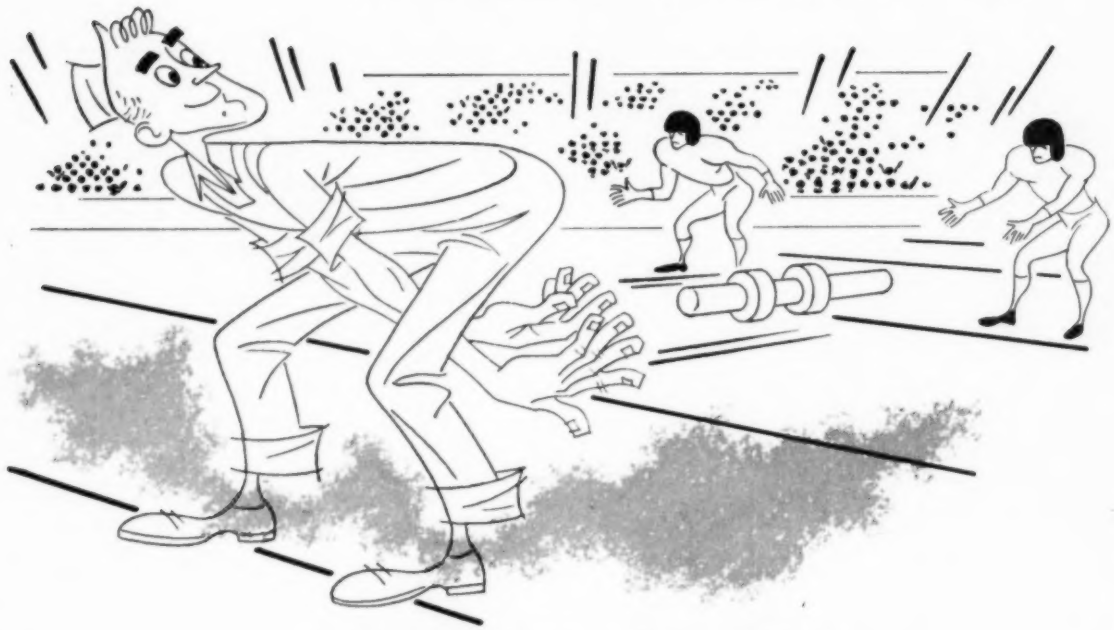
Turning Terminology

(as visualized by Tom the Trainee)



"CENTERING THE WORK"

Tom will be "on the ball" when he learns big-league lathe operation on a LeBlond Regal. These low-cost lathes are specially designed to cut down training time and maintenance, help you prepare Tom thoroughly for his future job in industry. Check these big-lathe features:

Geared headstock—Power is transmitted efficiently at eight conveniently selected speeds.

Quick-change box—56 feeds and threads can be chosen simply through this foolproof mechanism.

Leadscrew and feed rod—Both are provided to give you accurate thread-chasing, dependable feeds.

American Standard taper spindle nose—For safe, rugged, accurate positioning of chucks and faceplates.

One-piece apron—Long-life sturdiness and protection from dirt are built into the double-wall apron.

LeBlond Regal Lathes are available in 13″, 15″, 17″, 19″, 21″ and 24″ sizes and in a 13″ bench model. Also plain and sliding bed gap models. Write today for the complete story on these ideal training lathes.

THE R. K. LeBLOND MACHINE TOOL CO.
CINCINNATI 8, OHIO

WORLD'S LARGEST BUILDER OF A COMPLETE LINE OF LATHES